27–605
S. Hrg. 98–591

FUTURE OF U.S. BASIC INDUSTRIES

HEARINGS

BEFORE THE

SUBCOMMITTEE ON ECONOMIC GROWTH, EMPLOYMENT, AND REVENUE SHARING

OF THE

COMMITTEE ON FINANCE
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

SEPTEMBER 23 AND OCTOBER 3, 1983

Printed for the use of the Committee on Finance

U.S. GOVERNMENT PRINTING OFFICE
27-605 O WASHINGTON : 1984

S361-17

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FUTURE OF U.S. BASIC INDUSTRIES

FRIDAY, SEPTEMBER 23, 1983

U.S. SENATE,
SUBCOMMITTEE ON ECONOMIC GROWTH,
EMPLOYMENT, AND REVENUE SHARING,
COMMITTEE ON FINANCE,
Washington, D.C.

The committee met, pursuant to notice, at 9:33 a.,m. in room SD-215, Dirksen Senate Office Building, Hon. John Heinz (chairman) presiding.

Present: Senators Heinz, Dole, and Chafee.

[The press release announcing the hearing and the opening statements of Senators Dole and Heinz follows:]

[Press release, July 20, 1983]

SUBCOMMITTEE ON ECONOMIC GROWTH, EMPLOYMENT, AND REVENUE SHARING RESCHEDULES HEARINGS ON THE FUTURE OF U.S. BASIC INDUSTRIES

Senator John Heinz (R., Penn.), Chairman of the Subcommittee on Economic Growth, Employment, and Revenue Sharing of the Committee on Finance today announced new dates for hearings on the future of U.S. basic industries. The hearings will be held September 23 and October 3, beginning at 9:30 a.m. in room SD-215, Dirksen Senate Office Building. The dates previously had been July 22 and 25.

OPENING STATEMENT OF SENATOR DOLE

First, I wish to congratulate Senator Heinz for organizing these hearings. As I understand it, the focus of the hearings is on gathering the facts necessary to determine what the actual state of our basic industries is, and what the future holds. It seems to me that this is the appropriate first step to be taken, before we leap first into a major industrial policy debate. In my view, much of the discussion of our industrial problems has been just the opposite. Major legislative proposals have been made before we know the facts.

We do know that American manufacturing was particularly hard hit in the recession from which we now are recovering. From July 1981 to January 1983, 2.2 million jobs were lost. The prevailing view is that large numbers of these workers never will return to their jobs, and that they must be retrained for jobs in the "high-tech" sector. But the secular decline of our industrial base may have been exaggerated by the recession. A number of economists now believe that the biggest problem for manufacturing has been the recession and that no sudden, dramatic shift of resources is likely or desirable: Indeed, already 600,000 jobs have been added in manufacturing since the recovery began. I, for one, am not yet ready to write off our basic industries.

This is not to say that our industries such as steel, automobile manufacturing, and mining do not face a difficult period ahead. If present trends continue, we can expect a continued erosion in employment and our international competitive position in goods-producing industries, and a shift of resources into service industries. To a certain extent this shift is inevitable. Any public policy which attempts to thwart over the long-run changing consumer tastes, the legitimate comparative advantage of other nations, changing relative prices, and the advancement of technology is doomed to failure.

What we should be looking at are policies which will allow our industry to regain its competitive edge and stand on its own two feet. And, of course, we must stand ready to assist those workers who lose their jobs in this period of transition—the structurally unemployed. The Federal Government has an obligation to assist them by providing retraining, job search, and relocation asssitance. One of the problems is we don't know how big this structural unemployment problem is now, or how much worse it will get. It is my hope that hearings such as this will help to quantify the problem.

While this Senator is aware of the great problems facing smokestack industries, I also am wary of the notion of an industrial policy. The term is often used today as a code phrase for credit controls and import restrictions. For some it means emphasizing high-technology, while for others it is an attempt to preserve the current industrial structure. More often than lot, industrial policies call for expansion of tax preferences, which is exactly the opposite direction to go, in my view. Economic history provides countless examples of the futility of trying to prop up failing industries, or subsidizing new technology that cannot be made cost efficient. One of the good things to come out of the recent debate on industrial policy is the near unanimous opposition of economists to policies which target certain industries for expansion—"picking the winners," if you will.

In this regard, it is interesting to note that Japan's vaunted industrial policy appears, upon closer examination, to have had little to do with Japan's emergence as a major industrial power. As the Wall Street Journal recently reported, numerous studies have shown that Japan's policy of targeting individual industries for expansion has failed as often as not. Instead, experts on the Japanese economy credit the success of Japanese manfacturing to less government involvement, lower tax rates, and a greater commitment to quality control.

So, before we start talking about industrial policy, it might be more fruitful for American management and labor to recommit themselves to quality control and for the Federal Government to commit itself to a balanced budget.

It is too easy for management to blame unfair competition for problems brought on by their own poor practices and decisions. And it is far easier for Congress to spend several billion dollars on an industrial policy rather than get its own fiscal house in order.

OPENING STATEMENT OF SENATOR HEINZ

Today, the Subcommittee on Economic Growth and Employment will begin the first of a two part hearing on the future of basic industries. In coming months, the subcommittee will be holding further hearings on economic growth and employment in the service and technology sectors as well.

As the economic recovery continues and unemployment levels subside, the focus of congressional interest is shifting toward addressing the structural impediments to increased industrial competitiveness. Cyclical effects on production and employment—such as the recent recession—the deepest since World War II—have tended to mask the long-term structural changes now occurring in the marketplace. These structural changes are most evident in basic industries.

We seek a clear idea of the competitive position of industries vital to American long term economic strength.

These hearings are aimed at separating the cyclical problems, which will disappear as the economy improves, from the underlying structural problems. Hopefully, our hearings will provide Senators with the facts, and informed judgments about the solutions with which Congress could assist industries in overcoming structural barriers to economic growth and employment in basic industries.

I am personally convinced that our manufacturing base is in jeopardy. The most recent evidence of that trend is that manufacturing industries added fewer than 1 million jobs between 1970 and 1978, and have lost nearly 3 million jobs over the past 4 years. The depressing reality is that construction and production work today account for about 1 job in 8, exactly half the 1 in 4 we enjoyed in 1950.

Of course, the American economy today is vastly different from that of 1950. We are now irrevocably enmeshed in world competition, and in many vital areas we are losing out. More than 70 percent of U.S. goods are now subject to significant import competition, and more than half the Nation's supplies of 24 important raw materials, ranging from cobalt to petroleum, are of foreign origin.

At the same time that we are experiencing job losses from foreign competition, we are also gaining jobs through exports. One out of every six jobs in manufacturing now comes from exports. Two out of every five acres in agricultural production go overseas. Almost one third of U.S. corporate profits is derived from international trade and investment.

Given the challenge from abroad, we need to encourage American businesses to become more productive and competitive.

Back in 1981, Senator Danforth held a series of hearings on whether or not the United States should have an adjustment policy for basic industries. As I recall, the administration testified that we didn't need one, that the free international market would provide adjustment. Now, the administration may maintain that stance publicly, but, as often happens, appearances can be deceiving.

Let me illustrate my point. Secretary of Transportation Drew Lewis headed an interagency task force that proposed, and obtained, a voluntary quota agreement with the Japanese on automobile imports.

Most recently, at the urging of myself, Secretary of Commerce Mac Baldrige and others, the administration announced the establishment of a tripartite group to examine steel: the Steel Advisory Committee.

There are unmistakable political choices being made. On the House side, we've seen politically appealing "solutions" proposed. They're politically appealing because they're simple, and easy to understand. But, in my judgment, they are contrary to sound public policy because they are simplistic.

These "industrial policy" proposals are advanced as cure-alls for a large number of difficult and thorny issues, which require a series of actions rather than a simplistic and ultimately meaningless solution that runs counter to the deeply engrained values of most Americans.

I, and a number of my colleagues, are extremely skeptical of the ability of Government planners to bring about greater economic growth and employment than the private market.

In sum, Congress has a role and a responsibility to formulate policies to assist in the adjustment and growth of industries. However, we run the risk of acting too late or not at all if the debate becomes partisan and gets bogged down in politically appealing solutions which further sap the strength of the free enterprise system.

We look forward to the testimony of our witnesses helping the Congress come to grips with the structural changes in basic industries. The subcommittee also welcomes your views on appropriate Government incentives to promote economic growth, increase productivity, and further necessary adjustment.

Senator HEINZ. Good morning, ladies and gentlemen. Today the Subcommittee on Economic Growth and Employment will begin the first of a two part hearing on the future of basic industries.

In the coming months, we will be holding further hearings on economic growth and employment in the service and technology industries as well. As the economic recovery continues and unemployment levels subside, the focus of congressional interest is shifting toward addressing the structural impediment to increase industrial competitiveness. Cyclical effects on production and employment, such as the recent recession, the deepest since World War II, have tended to mask the long-term structural changes now occurring in the marketplace. These structural changes are most evident in basic industries.

We seek a clear idea of the competitive position of industries vital to America's long-term economic strength.

These hearings are aimed at separating the cyclical problems, which will disappear as the economy improves, from the underlying structural problems. Hopefully, our hearings will provide Senators with the facts, and informed judgments about the solutions with which Congress could assist industries in overcoming structural barriers to economic growth and employment in basic industries.

I am personally convinced that our manufacturing base is in jeopardy. The most recent evidence of that trend is that manufacturing industries added fewer than 1 million jobs between 1970 and 1978, and we have lost nearly 3 million jobs over the past 4 years. The depressing reality is that construction and production work today account for about one job in eight, exactly half the one in four we enjoyed in 1950.

Of course, the American economy today is vastly different than that of 1950. We are now, among other things, irrevocably enmeshed in world competition, and in many vital areas we are losing out. More than 70 percent of U.S. goods are now subject to significant import competition and penetration. And more than half of the Nation's supplies of 24 important raw materials, ranging from cobalt to petroleum, are of foreign origin.

At the same time that we are experiencing job losses from foreign competition, we are also gaining jobs through exports. One out of every six jobs in manufacturing now comes from exports. Two out of every five acres in agricultural production go overseas. Almost one-third of U.S. corporate profits is derived from international trade and investment.

Given the challenge from abroad, we need to encourage American businesses to become more productive and competitive. Back in the beginning of 1981, Senator Danforth, the chairman of the International Trade Subcommittee of this committee, held a series of hearings on whether or not the United States should have an adjustment policy for basic industries. I participated in those hearings, and I remember the administration's testimony to the effect that we do not need any adjustment policies. That the free international market would provide the necessary means for adjustment.

Now the administration may maintain that stance publicly, but, as sometimes happens in Washington, D.C., appearances can be deceiving. Let me illustrate my point. Back in 1981, Secretary of Transportation, then Secretary Drew Lewis, headed an interdepartmental task force that proposed, among other things, a voluntary quota agreement with the Japanese on automobile imports which was subsequently obtained from the Japanese. Most recently, at the urging of myself, Secretary of Commerce Malcolm Baldrige and others, the administration announced the establishment of a tripartite group to examine the problems of the steel industry. Namely, the Steel Advisory Committee, which we obviously welcome.

There are unmistakable industrial policy strategies being developed and implemented. There are also sweeping politically appealing solutions being proposed. Their political attractiveness is that they promise a solution where wise men in Washington will look into the future, allocate resources in ways the market system, they say, would never achieve, and thereby provide and secure vastly more economic growth and employment than we could ever otherwise achieve.

I am frankly suspicious of those kinds of industrial policy proposals that are advanced as cure-alls for all the difficult and thorny issues. Also I am suspicious of solutions that run counter to the notion deeply engrained in our national consciousness of anti-interventionism and the belief in the free enterprise in the marketplace.

These are values Americans are not likely to lose. They are likely to see, as such, proposals that run counter to those values—are most unlikely to see enactment.

Americans have traditionally found greater personal opportunity through the workings of the free marketplace than through Government intervention.

I, and a number of my colleagues, are extremely skeptical about the ability of Government planners to bring about greater economic growth and employment than the private market.

In sum, Congress has a role and a responsibility to formulate policies to assist in the adjustment and growth of industries. However, we run the risk of acting too late or not at all if the debate becomes partisan and gets bogged down in politically appealing solutions which further sap the strength of the free enterprise system.

May I say that we look forward to the testimony of our witnesses in helping Congress come to grips with the structural changes in our basic industries. The subcommittee welcomes additional views on appropriate Government incentives to promote economic growth, increase productivity and further necessary adjustment.

Before I call our first witness, I'm going to turn to Senator Dole for any opening remarks he would care to make.

I have to apologize to our witnesses. I was informed at about 5:30 last night that I must go to the floor at 10 to manage the Export-Import Bank bill. That is our leadership's desire to take it up. I've been trying to get the leadership to take it up for 2 months. I finally got my wish, but that's the way it goes on timing.

I, therefore, will want to announce that we will take as many of our witnesses as we can between now and 10 and then we will recess the hearing and reconvene it at 1. I want to apologize to any of our witnesses this may inconvenience. These are circumstances beyond our control, and I beg your indulgence.

Senator Dole.

Senator **Dole**. I would just say that I can stay until 10:30 or a little later, if you won't be here.

Senator **Heinz**. I think that might help somebody. And we will work with the witnesses. I appreciate that, and I accept that gracious offer.

Senator **Dole**. I could offer your bill on the floor——

Senator **Heinz**. Oh, you can stay here as long as you want. [Laughter.]

Indeed, maybe by acclamation.

Our first witness this morning is Mr. David M. Roderick, the chairman of United States Steel. Mr. Roderick, would you please come forward?

STATEMENT OF MR. DAVID M. RODERICK, CHAIRMAN. UNITED STATES STEEL CORP., ON BEHALF OF THE AMERICAN IRON & STEEL INSTITUTE, WASHINGTON, D.C.

Mr. **Roderick**. Mr. Chairman, I do have a brief statement, but in light of your schedule, if you would prefer, we have submitted some testimony for the record. My comments are merely a summation of what we have submitted to the committee, and is available to you. And if it would assist your schedule and Senator Dole's schedule in any way, I would be very happy to forego reading what you already have in a printed form.

Senator **Heinz**. Without objection, we will put the entire testimony in the record. But perhaps you might want to make some of the key points in your testimony.

Mr. **Roderick**. I would be happy to just summarize it.

[The prepared statement of David M. Roderick follows:]

STATEMENT

DAVID M. RODERICK

Chairman, United States Steel Corporation
and
Chairman, American Iron and Steel Institute

Mr. Chairman, I appreciate appearing at this hearing today on problems affecting our nation's basic industries. I shall comment as a representative of one major basic industry -- the steel industry -- on what must be done to resolve its problems.

As to the present condition of the American steel industry: the economic conditions of the past several years have been the worst in the industry's history and an enormous setback for the industry. The picture is a grim one and well known to you, I'm sure.

The industry lost $3.2 billion last year, and steel losses are continuing this year. The industry's 1982 capital investment in steel was $2.2 billion. We expect about $1.7 billion of steel capital expenditures in 1983. And yet, it is generally agreed by all that a minimum of $6 billion a year is required for the industry to modernize itself. In short, steel may have been at a crossroads in 1980, but the industry is now in an investment crisis.

Industry debt is now at its highest level in history. Cash flow and other available funds dropped so much in 1982 that steel capital expenditures are running at only about one-quarter the level needed. Capacity utilization is still below 60 percent and well below the break-even point. Approximately 103,000 steelworkers are on layoff. And the seven largest American steelmakers have permanently terminated more than 33,000 of their management and non-union salaried workforce. The impact has been felt at all levels of administration and production. The industry is still very much in crisis, and its effects are now apparent.

To go directly to the heart of the matter: some people ask, "Do we need a steel industry?" Others answer, "We may only need a small one." These are the spokesmen for the so-called post-industrial culture who have been advancing the idea that the U. S. really doesn't need its basic industries, but instead should depend upon a strong future in high technology and service industries.

We in the steel industry visualize rapid growth for high technology and service industries, but we emphasize, nonetheless, that the basic industries are still very essential to the strength of the American economy.

And the facts confirm it. The contribution of basic manufacturing hasn't significantly diminished over the past decade, even under the difficult conditions faced over the past five years.

In 1981, the most recent relatively normal year, shipments of our basic industries provided $823 billion to the U. S. economy -- 51 percent of the total for all manufacturing. These industries employed 47 percent of the manufacturing work force and 10 percent of the entire U. S. labor force. Basic industries also paid out 47 percent of total manufacturing compensation and 12.6 percent of total compensation in the economy. The steel industry, a large user of the energy industry's products, consumed 3.9 percent of all energy used in the United States in 1980 and 16.2 percent of the amount used in manufacturing, including 4.8 percent of purchased electricity, 53.1 percent of coal, 11.6 percent of natural gas and 9.4 percent of fuel oil.

That is why Martin Feldstein, Chairman of the Council of Economic Advisors, said on February 17 in testimony before the Senate Budget

Committee: "To put it bluntly, it is not clear whether a recovery would be long sustained if such key industries as steel, construction and chemicals remain severely depressed."

Those who emphasize that only high technology and services are the key to our future do not comprehend that the U. S. cannot effectively bear its burden of world leadership if our basic industries continue their decline. Nor could we properly provide for our own national defenses if basic commodities must be obtained offshore.

The basic industries are a vital component of our economy, simply too vital to be written off in favor of microchips and fast food.

Basic industries provide many of the products used in building and equipping high technology plants. In turn, our high technology industries sell a large share of their output to our domestic basic industries and need this home market. If our basic industries continue to decline and we require our high tech industries to depend almost completely upon export markets which other governments close off when they choose to, then high tech will become the sunset industry of the future.

Our domestic economic growth and international political strength very much depend on a proper mix of basic manufacturing industries, high tech and services.

Which brings me to the main point: our government needs to consciously recognize the significance of the steel industry to this country and change the policies which have contributed to its decline. We cannot continue to accept the involuntary liquidation of the fourth largest industry in the United States, an industry which had $44 billion in steel sales in 1981 and only $25 billion in 1982; an industry which paid almost $12 billion in wages in 1981, and only $8.8 billion in 1982; and an industry which has shut down hundreds of facilities in the past five years, at great economic and human cost to companies and communities across the country.

It should be clear to our government by now that steel is in deep trouble and must have responsive public policies to ensure that this nation has a strong steel industry. The steel industry is doing its part. Indeed, our steel industry has been engaged in extraordinary self-help efforts:

- o Major equipment installations and operating cost improvements have been made
- o Entire plants and facilities within plants have been shut down
- o Management forces have been slashed and management salaries and benefits have been cut
- o Dividends to shareholders have been reduced substantially
- o A new labor agreement has been negotiated with the United Steelworkers of America, resulting in meaningful labor cost reductions, and
- o Even our suppliers have recognized the problem and have provided cost reductions of their own.

And, while reducing production costs, we have not neglected the product. The quality of the industry's steel products has continued to improve. The largest consumer of steel in this country said recently that the domestic steel products it buys are equal to -- or better -- than any foreign steel it is using worldwide. And the specialty steel industry in this country is acknowledged to be technologically up-to-date.

But the self-help efforts of the industry are not enough. Responsive government policies in support of the industry's own efforts are needed to insure adequate modernization.

We are not advocating government loans or subsidies for steel, but the industry does need changes in government policies affecting the industry if this country is once again to have a strong, modern and competitive steel industry.

Mr. Chairman, the single most important issue confronting the steel industry is the problem of dumped and subsidized steel imports. Over many years, a variety of public and private efforts have been undertaken to stem the flood of steel imports, but despite all our efforts, the problem persists.

Since most foreign steel industries are government-owned, directed or "guided," the world market in steel is not functioning as a market normally would -- it does not allocate sales and capital to efficient and cost-competitive producers, but, quite the contrary, unnaturally shores up inefficient, unnecessary production.

Almost all major national steel markets are closed off in one way or another. The effect has been to divert an increasing flow of foreign steel into the U. S. market.

Imports in the 1950s took 2.3 percent of the market. In the 1960s they took 9.9 percent of the market. In the 1970s they averaged 15 percent of the market, and in 1982 they took 22 percent of the market. The latest development has been the rapid increases in import penetration involving subsidized and dumped products from third world countries, especially Brazil, South Korea and other developing nations. The fact is that for international political and economic reasons, there has been a lack of will to enforce our trade laws against the LDC's.

Given the essentially political nature of the world steel problem, we have concluded that the conventional system of trade laws is not working. That is why our industry has concluded, Mr. Chairman, that for five years, total steel mill product imports into the U. S. should be limited to no more than a 15 percent import penetration, with appropriate allocation by major product.

Mr. Chairman, if we are to adequately modernize, we must have imports held to a reasonable level for several years. We can't have it both ways. Either we want a strong American steel industry, or we don't! Other nations have decided they want their steel industries to be strong and are taking steps to ensure it. Without abandoning the long-term goal of world trade expansion, I believe we can achieve a strong American steel industry through an adjustment program consistent with GATT rules.

We should notify our steel trading partners that the U. S. is initiating an adjustment program for its own steel industry which will require reasonable limitations on the steel imports entering the country during a period of adjustment. This would give our domestic steel companies a specified period of time to restructure themselves. This approach is consistent with U. S. trade laws and with GATT rules. Our steel trading partners could hardly object to a program like this, since many of their governments are funding far more substantial programs for their own steel industries.

While trade policy is our overriding concern, other policies also have a significant impact on the steel industry.

By the end of 1985, the steel industry will have a balance of $1.5 billion of unused investment tax credits and $4.6 billion of NOL carryovers, primarily from unused ACRS deductions. As we indicated, our industry's capital investment is so low compared to the need that the industry is in a state of accelerating self-liquidation. We must expand our investment in steel.

We are, therefore, urging the Administration and the Congress to support legislation to permit the industry to receive cash for investment tax credits already earned -- but not currently usable. The Jones-Conable bill, supported by the steel industry, would entail payback in some form. Legislation should also provide an extended carry-back period for net operating losses and provide for tax transfer leasing provisions for several years beyond 1983 to allow immediate cash recovery of additional investment tax credits and capital cost recovery deductions on new investments.

Why should only our consistently profitable industries have full use of these ACRS benefits -- in effect, penalizing the cyclical basic industries?

Other governments are taking action in this regard. The Canadian Government, for example, has announced it will provide refundable investment tax credits for industries whose profits have been insufficient to use them. Our government should take the same action.

Our modernization efforts can also be affected by antitrust policy. The world steel industry is in the midst of major rationalization which is being driven by the need to close inefficient plants, reduce costs and establish profitable facilities. Outside of the U. S., such efforts are being guided and subsidized by governments.

West Germany is combining German steel operations into two basic groups — the Rhine and Ruhr. Similar rationalization efforts are under way in the UK, France, Benelux, Italy and even Japan. But within the United States, rationalization plans of steel companies could be held up by antitrust concerns.

There is no present need for a major overhaul of the antitrust laws, but our federal government needs to announce a policy that will allow joint ventures and mergers which retain steel operations that otherwise may be shut down.

Mr. Chairman, the world steel market is not functioning the way a market should -- allocating sales and capital to the most cost-competitive producers. Steel industries with the worst profit performance in other countries have been among the most aggressive in undertaking capital investment.

Compounding this problem is the phenomenal extent to which exchange rate fluctuations have altered comparative costs of domestic industrial production versus those of foreign producers. The exchange rates of the 1980s are acknowledged to be an aberration, with the yen substantially undervalued against a dollar overvalued in terms of the huge merchandise trade deficits the United States has been running for several years. The only real question is how much the yen is undervalued -- 20 percent or 30 percent?

Not many people understand the enormous effect exchange rate fluctuations have had on comparative steel costs. The underlying competitive position of our industry would be far stronger if exchange rates had maintained the values which prevailed in 1973-1979.

Most experts agree that the real effective exchange rates of 1973-1979 did in fact more accurately reflect the underlying structure of comparative costs in the world market, but that the rates since 1980 are destroying underlying relationships, and are, therefore, not a true measure of our competitiveness. Changes in exchange rate policies are necessary!

A fresh U. S. Government policy approach for steel is imperative! If the profitability of this industry does not improve, more domestic steel firms will cease operations or leave the steel business to invest where there are prospects for profits.

Continued contraction of the U. S. steel industry will cause continued major losses in employment and tax revenues, with serious consequences for many regions of the country, and for our national economic security. The loss of basic industry capability would create a serious dependency that could be disastrous for defense purposes. The present competitive difficulties of the steel industry therefore represent a national problem with wide ramifications.

Steel is a test case for problems which affect other basic U. S. industries. Together we must put in place the necessary policies to ensure the modernization of the domestic steel industry if the nation is to experience full economic recovery.

-oOo-

Mr. **Roderick**. Well, as you know, Senators, the steel industry is truly in a crisis mode. The industry last year lost $3.2 billion, and losses, of course, are continuing into 1983. We are investing in 1982 at the rate of $2.2 billion in new facilities, and we expect that in 1983 this will fall to $1.7. Our best guess is that in 1984 it could fall below $1½ billion in new steel investments in this country.

We all know that the miminum that is required to adequately modernize and continue the modernization of the industry is $6 billion. The capacity utilization of the industry is still below 60 percent. We have just in steelworkers—that's blue collar steelworkers—over 100,000 steelworkers are still on layoff. And the seven largest steel companies have permanently terminated over 33,000 management people and nonunion people. So you can say that as of this stage there are probably between 130,000 and 140,000 people that have been employed by the industry that are no longer employed by the industry.

I think you have to multiply that, or at least double, when you think of the coal miners and all the others that clearly support the industry, and clearly they are also out of work.

I think that what we are engaged in is a quiet, involuntary liquidation of the American steel industry. It's an industry that we had $44 billion of sales in 1981, and only $25 billion in 1982. We paid $12 billion in wages in 1981, and that's down to $8.8 in 1982. So we are a very large industry. And we think a vital one to this country.

We have engaged in a lot of self-help. We have not been calling on Government to solve all of our problems. We have been reducing the amount of overhead. The union has made a concessionary labor agreement with us. Our suppliers have come forth with lower costs of the things that we purchase.

But I think that where we have flunked the course is clearly in the trade area. And I think the trade area and in the tax area or the capital fund area is the area where we need very substantial help.

At the end of 1985, the steel industry will have a balance of $1.5 billion of unused investment tax credits, and $4.6 billion of NOL carryovers, primarily, of course, from unused ACR's. We are, therefore, urging the administration and the Congress to support legislation to permit the industry to receive cash for investment tax credits already earned, but not currently usable. We think the Jones-Conable bill, supported by the steel industry, would entail, of course, some form of payback so you are really talking a timing difference; not a Government grant or a Government subsidy.

Our modernization efforts, clearly, will be affected as to whether or not that type legislation comes forth. And we do recognize the difficulty of the timing of that type of a request.

Mr. Chairman, I think the world steel market, as we know, is not functioning as a market. We know that foreign producers are literally being subsidized into the marketplace in the United States. We know that we have a tremendously distorted dollar which is hurting our ability to export steel directly, and to export the items made from steel. And conversely make our markets vulnerable, extremely vulnerable, to the imports of things made from steel.

So, clearly, we are in extraordinary times. I think a fresh Government policy approach for steel and a more enlightened one is absolutely imperative. I think that if the profitability does not improve, many domestic steel firms will cease operation, and the steel business will be a very difficult business to sustain. And I think that puts our defense in many of our other steel using industries in a very, very dangerous position.

I think there is no reason for unnecessary contraction of the industry, contraction of industry employment, and I think it can be corrected by both more rigid and effective trade administration, and, hopefully, some selective tax relief.

I think steel is a test case for the problems which affect the U.S. basis industry. Together, hopefully, the industry and the Government working with our employees can and should be given an opportunity to bring and maintain a good healthy industrial base in this country. I think it's essential to our security. And I say that from both an economic point of view as well as a defense point of view.

I think that would summarize, Mr. Chairman, the highlights of what is in my written testimony.

Senator **Heinz**. Mr. Roderick, thank you very much. You have painted a very bleak picture of the steel industry, absent specific actions being taken by the Government; Congress and the administration acting together. You have said that capital investment will continue to decline. That it is at levels extraordinarily low both by historical standards and by the standards of need that you have described, the $6 billion a year.

Currently, your industry is investing approximately a quarter of that rate.

Mr. **Roderick**. That is right, Senator.

Senator **Heinz**. You've indicated how payrolls have been slashed from $12 billion by the industry to approximately $8 to $8½ billion, a 33⅓-percent cut in payrolls. Earlier this week United States Steel announced that it was laying off around 4,000 white-collar employees. Not just in my hometown and your hometown of Pittsburgh, but reaching across our State to the Fairless Hills works, and I imagine to other locations as well.

Clearly, the industry is in very serious shape. And you have proposed that Congress enact legislation similar to the Jones-Conable bill over here; the Durenberger bill to permit the claiming, as I understand, of ACR's and tax credits that you have earned. That you do not have the tax liability to, in effect, take advantage of. You have urged that there be a new policy, not a new law where antitrust is concerned. And you have indicated that the undervaluing of the yen is your most critical trade problem.

Now let me ask you—is it only the undervaluation of the yen, and the antitrust policy, and the tax policies that afflict the industry? If we address those three areas, and we didn't address the areas that some other people suggest, such as the overvalued dollar, which I happen to believe is driven by deficits that are too large and too fast a growth rate, too high a percentage of the GNP being taken by Government spending, would the steel industry be able to recover? And to what extent would it recover?

Mr. **Roderick**. Well, I believe if we had rigid enforcement of our trade laws and the tax changes that we have suggested, along with the ability to rationalize the industry where that did not lead to noncompetitive situations—there is no question that would be extremely helpful to the steel industry. There is no question that the greatest help to the steel industry coupled with those things would be lower interest rates; 65 percent of the steel that is used in the country is connected with heavy capital spending. And high interest rates, as you know, have absolutely submerged the recovery in that sector. So we clearly need to do those things and be directing ourselves to try to bring down interest rates. And, clearly, I think the current deficit is a contributing factor. I would not say it is the only factor, but I believe it is certainly a major contributing factor both in actual fact and in the psychology out there in investing Americans.

Senator HEINZ. If you had to array in terms of importance and prioritize what I now count as roughly five areas of concern to the steel industry, in effect, the substantial refundability of the tax credits, a new antitrust policy administered by the Justice Department, moving on the Japanese system of rigging interest rates that undervalues the yen, more rigidly enforcing trade laws and more actively attacking the Federal budget deficit, something that Senator Dole has been a leader in attacking, as I think the Finance Committee, which of those five would be at the top of the list?

Mr. RODERICK. I would say the most immediate help and the most important one would be clearly something that would either form a new law or what I would call a meaningful, honest enforcement of our trade laws that would have imports at about the 15-percent level would be at the top of my list.

I would say that the second most important would be the lowering of interest rates.

The third priority that I would clearly put on would be the ability from a timing point of view to permit the industry to, in effect, cash in some of our tax deferments that we will be able to reach for at some point but where they are not useful to us now.

So I would say they would be the three. I would say rationalization does not require any change of law. And I would rate that fourth.

Senator HEINZ. I have just informed Senator Dole I have time for one more question and then he is going to be chairman of this subcommittee as well as chairman of the full committee, for which I am deeply grateful.

Mr. Roderick, a number of us worked very hard for the establishment of, in effect, a tripartite steel committee. The administration has established that committee. Do you believe that committee will be successful in helping achieve all or most of the five goals that you set forth?

Mr. RODERICK. I believe it is a good vehicle for implementing a specific plan to make it happen. If it is merely used as a forum, Senator, for more debate and more discussion of what has already clearly been identified as the problems of the industry, I think it would be quite ineffective. But if it is really used to get labor, and Government, and industry to act in a coordinated way to impact regulation and to impact legislation rather than to merely have a talk forum, yes, I think that it can be very successful. And I think that has to be done in the first 6 months of its existence or I think it ought to be just eliminated.

Senator **Heinz**. I gather that at this point there is not a multilateral or trilateral commitment to a specific set of goals to be implemented.

Mr. **Roderick**. There is not because there has not been the people to be appointed to the committee, Senator. They have not been appointed yet. It's still in the framing stage as to how it should be structured. We are working with the steel workers of America and the AISI and the Commerce Department to try to determine how it would be structured, who would be the members, and that is all necessary before the necessary enabling actions take place.

Senator **Heinz**. I gather that it would be a fair statement and summary of your position to say that for the steel industry to make progress on this vast array of very significant issues that you have outlined here that you believe that a tripartite mechanism where labor is involved, where, obviously, management is deeply involved and where the government is involved, and, hopefully, cooperative. That that kind of an effort is very important to getting agreement on an agenda that will really not only help the steel industry but will point America in the right direction. Is that correct?

Mr. **Roderick**. I can certainly speak for the steel industry, and I would agree with that certainly for the steel industry, having had experience firsthand with the old tripartite approach, which did have beneficial effects.

Senator **Heinz**. My time has expired. And I turn both time and the gavel over to my good friend, Senator Dole.

Let me just say that when we were talking about the deficit, I want to express my admiration to the chairman of the full committee, Senator Dole. I don't know of anybody who has done more difficult things to try and actually address the problems. A lot of talk here in Congress about how we have got to do something about the deficit. Senator Dole has had the courage to stand up to banks and all other kinds of special interest groups who somehow think that their special interest is more important than the best interest of the United States.

Mr. Roderick, I thank you for being here.

Senator **Dole**. Thank you.

Mr. **Roderick**. Good seeing you again, Senator.

Senator **Dole**. Well, I appreciate it. And I think we can probably conclude the hearing promptly unless somebody is really wound up.

But Senator Heinz just touched on a point. You say you are concerned about interest rates and you are concerned about deficits, but still you would like another tax subsidy which would add to the deficit and increase interest rates. And that's the problem. Everybody who comes wants us to do something that would take more dollars from the Treasury. If we are going to start cashing in unused tax credits, why then we are going to lose some revenue, which we will have to borrow. That will crowd out the private sector again because we are borrowing money for another tax subsidy. So I don't know where it stops. It is a difficult problem, as you realize. And as you have indicated, that's not your top priority. Your top priority is the same as ours—the deficits, interest rates. I haven't given up yet on the President getting some of us together yet this year to try to figure out some bipartisan strategy to reduce the deficits.

The disquieting point is that we get all the talk around this town that we can't do it until after the election. We don't mean the day after the election. We mean about a year after the election. So we are talking about 2 years from now before the Government faces up to deficits. And in my view, is probably straining your industry as well as many others. So it's not that we don't want to help the steel industry. It's vital. It must be preserved.

But I'm not certain how far the Government can go. What about quality control? We've been looking at some studies of the Japanese and their industrial policy. When you take a closer look at it, it may not have been the targeting, it may not have been some of those Government efforts, but the fact that they have better quality control. Maybe a better product at less cost, gives them the edge.

Mr. **Roderick**. Well, I don't really believe in our industry that the quality problem has really been a factor of any magnitude. I have talked to the two largest steel consumers in the United States who run quality examinations of domestically made steel versus steel available to them in other parts of the world in which they operate. And I have been assured by both—again, I'm saying the two largest—that the American steel quality for their products is fully competitive with steel anywhere in the world. So I just don't think that is a problem in our industry.

Now if we begin to fall behind as we have for a great number of years in further modernizing our facilities, it will--there will come a time when our quality will deteriorate versus our foreign competition. I fully agree, Senator, that it is a difficult time when you have large deficits to be saying that you need some relief in the tax area. But nonetheless we think these are tremendously extraordinary times for this industry. We feel that the type request that we are making is modest enough and appropriate enough for the total long-term economic and defense of this country that we think it is warranted, and we think it would be a very good investment to consider in any tax change that may take place.

But we are sympathetic to the problem. We certainly are upset about the deficit to the extent it holds interest rates up, discourages heavy capital investment from taking place. We are, I guess, the old story of making the contribution versus the commitment. I guess some of us are making a contribution but our workers are making a commitment. The difference between those two for those who are not aware of it is sort of like ham and eggs. The chicken for breakfast, ham and eggs, he makes a contribution. But the pig makes a commitment.

I think that we are really, when it comes to our employees and our workers—I think that the deficit is too cruel of an answer to them long-term because we are impacting their lives—long-term unemployment. Their careers. These are not people who have been working in it 1 year or 2 years. These are people now that are have been committed to this industry in this country as hardworking people for 15, 20, and 25 years.

So we want to see the deficit dealt with as effectively as possible to bring those rates down.

Senator DOLE. Well, as you know both parties are talking about industrial policy. Some mean hi-tech, some mean smokestack. We're not certain anybody has a clearly defined industrial policy, but I assume it would be a matter of great debate in the 1984 election. Whether it just means more tax subsidies or more government, in my view that wouldn't be an industrial policy. That would be government policy, which might short-term have some relief, but long-term might be distasteful. So I commend Senator Heinz, Senator Chafee, and others on both sides who are looking for some rational way to approach it. I don't know what the impact of the revenue loss would be nationwide or even for United States Steel if, in fact, those things you suggest were done.

Do you have any cost figures?

Mr. RODERICK. Well, the only figures we do have is at the end of 1985 is we are saying if we were to accelerate the recovery of our unused investment tax credits for the total steel industry—we are saying that number, the unused portion, would be $1½ billion.

The NOL's at that point, which we would like to get some help there also, would be $4.6. So if you added those two up, you are talking $6 billion for the steel industry.

The Jones-Conable approach, as I recall it, Senator, is, of course, only dealing with the unused investment tax credit would be an 85-percent recovery that then you would have to begin to pay back in several years. So what it would be is it would be advancing the use of the money, but the money would have to come back in a very orderly way, if you would not have otherwise used them. So it isn't a Government grant. It's an advancement of something that will come in time. It's just more or less trying to get it to you during the period of the greatest hemorrhaging.

Senator DOLE. If that were done, does that mean everybody is going to go back to work?

Mr. RODERICK. I think, obviously, many would get back to work. Obviously, any money that we get from this source would be—and everybody I've talked to in the industry, Senator, are perfectly willing to make this commitment in any way that the Government would wish. Any money that is put back through using the unused tax credits or the NOL's would be directly plowed back into the accelerated modernization of the industry.

So I think, yes, you would have a lot of construction people called back to work. And, yes, I think we would have a more modern steel industry, and a lot more steel workers would be back to work.

Now when you say everybody, that probably wouldn't and could never happen.

Senator DOLE. I think that's another problem. I think we have the job retraining programs and other programs. We have some members pushing for trade adjustment assistance. Just passed out of this committee yesterday afternoon, an 18-month extension. A couple of Federal supplemental benefits in the unemployment area. States contribute zero. That's about a $4 billion program over 18 months. Ours is much less than the House-passed version.

There is no question there is a very serious problem that should be addressed. I'm not certain we have any real time to finalize some comprehensive plan that would not be all on the tax side.

Labor has to make some—they made sacrifices, no doubt about it. Management has got to make a tripartite effort, I guess.

Mr. **Roderick.** We are willing to play a responsible part in that three-cornered stool.

Senator **Dole.** We generally end up with the whole stool.

Mr. **Roderick.** I understand. Sometimes we feel we are the stool.

Senator **Dole.** Well, we appreciate it very much. I'm pleased I had an opportunity to be here. We will be working with you and others in the industry because it's basic; it should be preserved. I don't think anybody disagrees with that whether we live in Kansas, California, or Pennsylvania. I understand Senator Heinz might have a little different view than some of us who are removed.

Thank you very much.

Mr. **Roderick.** Thank you, Senator.

Senator **Dole.** Our next witness is Ms. Norma Pace, senior vice president, American Paper Institute, Commissioner, National Council for Employment Policy, Washington, D.C.

I understand that Dr. Raines could not be here this morning. So following Ms. Pace we will have a panel consisting of Andrew Hill and Dennis Bedell.

STATEMENT OF MS. NORMA PACE, SENIOR VICE PRESIDENT, AMERICAN PAPER INSTITUTE, NEW YORK, N.Y., AND COMMISSIONER, NATIONAL COMMISSION FOR EMPLOYMENT POLICY, WASHINGTON, D.C.

Ms. **Pace.** Thank you, Senator.

I'm here to give you two messages: One from the National Commission for Employment Policy, and the other from the paper industry.

Basically, the commission's charge under CETA and the Job Training Partnership Act is to provide policy advice in the area of employment and training. Because of this responsibility, we share the concerns about basic industries and where they are headed. What we see is that we have to look at this problem as an unemployment problem on the one hand, and output concern on the other.

And while it is true that employment in goods-producing industries is declining as a percent of total employment, it's also true that output in goods-producing industries has held a rather stable relationship to total output during the past 20 years. What we see here is an employment problem of preparing people for the jobs of the future—and understanding how basic industries are changing in both their growth potential and in their characteristics.

This is what the commission is deeply concerned with. Because of this concern, the commission has established as its high priority in 1984 a study on the "Changing Requirements of the Work Place" for the remaining years of this decade and into the future.

We are tackling the question of high tech; particularly what high tech is because people talk about high tech but cannot define it.

Senator **Dole.** We talk about it all the time. We don't know what it is.

Ms. Pace. It's anything; it's computers; it's this and that. And so we are trying to give some dimension to the problem. For the moment, our study has used what researchers have used generally and that is to take the percent of output that is spent on R&D as an indication of high tech's importance, along with the number of scientists, engineers, and technicians who are employed in industry. These measures give one a rough idea of how important each industry considers high tech as the way to maintain its growth.

From this point of view, we see that it is an industry that employs about 5 million people; that it will grow; but that its contribution to people employment is not going to be large enough in the future to meet the needs of the growing labor force. It will be an aggressively growing industry—one we need for defense, and for higher productivity. We are going to have an ongoing employment problem, and this is what the commission is addressing in the year ahead. We feel certain that as our studies proceed we will be able to provide more guidance in this very important area.

The message from the pulp and paper industry is that we are thriving and healthy. Our output of paper is up about 6½ percent this year; on the packaging side, because industrial production is revving up, output is up 7.3 percent. Last year both sectors showed declines.

We have experienced erosion in some markets, but we have also benefited from growth in other markets. Some of this growth reflects advertising gains. This is a time when businesses advertise. The tax cuts have encouraged that kind of promotional activity. We also are benefiting from the growing installations of computers and copiers. Most people think that is a threat to paper. And maybe 20 years from now it will be. But at the present time, people still want a hard copy of everything. That need is booming the printing and writing side of our paper industry.

We are steady employers, employing about 700,000 people. In a recession, employment might fall off about 30,000, but that's all. And that is because the process of producing paper and packaging materials is a continuous one, requiring large capital investments.

I think I heard Mr. Roderick say that the steel industry needs $6 billion to modernize the steel industry. Well, we are spending $6 billion a year, right now—that is twice what we were spending only 7 years ago. We project that by the end of this decade we will need $10 billion a year for capital outlays.

So, we do seek some tax relief to generate higher cash flows. During the past 2 years, the industry's internally generated cash flow was half its capital outlays. In order to finance these advancing capital outlays, some companies sold assets; others used the leasing option when it was available; and, of course, some also redeployed some assets. The industry borrowed heavily. It is running out of those recourses.

Consequently, we join other industries in requesting even faster capital recovery, and more full and flexible use of the tax credits. These would help the paper industry because they will be reinvested in job creating opportunities and keep this basic industry alive.

Through heavy capital investments, Senator, the industry has become the least cost producer worldwide. It is increasing its aggressiveness in export markets. The industry has a wonderful demand outlook. All it needs is some additional money to finance growing investments.

I conclude with the hope that henceforth we can rely more on the findings of the national commission studies in terms of both employment changes and the training requirements to provide the job skills needed in the future. We will be happy to come back next year and present these findings.

Senator Dole. Thank you very much.

[The prepared statement of Ms. Norma Pace follows:]

TESTIMONY OF

NORMA PACE

SENIOR VICE PRESIDENT
AMERICAN PAPER INSTITUTE

AND

COMMISSIONER

NATIONAL COMMISSION FOR EMPLOYMENT POLICY

My name is Norma Pace. I am Senior Vice President of the American Paper Institute and am testifying today on behalf of the National Commission for Employment Policy. Accompanying me is Dr. Carol Jusenius of the Commission staff. We thank you for this opportunity to testify. Because the Commission's particular charge under CETA, its authorizing legislation, and its successor, the Job Training Partnership Act, is to provide policy advice in the area of employment and training, the Commission shares your concern about the future of basic industries in the United States, and has identified the employment impacts of these changes as a priority research item for fiscal year 1984.

Since its establishment under the Comprehensive Employment and Training Act of 1973, the Commission has conducted and supported research on the experiences of several groups in the labor market--such as blacks, Hispanics, women, and older workers. Currently, we are undertaking research on the workplace, and plan to collect information on factors that affect the demand for workers. We believe that much more needs to be known about the changes taking place in industries, including their potential for growth and their changing operations in order to make policy recommendations on national employment and training issues.

Certainly, one of the key factors influencing the demand for workers is, and will continue to be, technological change. Because this country is a world leader in many of the new technologies, such as robotics and other "high tech" equipment and because it is quite apparent that this new technology has the potential to greatly influence the type, nature, and location of jobs, the Commission has selected this factor as the first of several projects on the workplace. I would like to share with you today some of our preliminary findings that can provide a useful framework for considering the impact of technological change on the workforce.

Goods vs. Services

First, as background information, it is important to look at job growth in two broadly defined sectors of the economy: the goods-producing sector and the service sector. Statements are often made that the American economy is shifting emphasis from goods production to services output. These statements are based on the fact that job opportunities are growing more rapidly in the service-oriented sector of the economy than in the goods-producing sector. Such statements, taken out of context, have raised concern about the future direction of the economy, including the role of America's manufacturing exports in the world market and the economy's ability to meet domestic needs. Another complicating factor is that the several recessions of the past decade have more severely affected manufacturing than other sectors and have led people to associate short-term set-backs in job opportunities with long-term trends.

It is important, therefore, to examine both the actual and the relative number of jobs in the goods and the service sectors. Between 1979 and 1990 the number of jobs in the service sector is expected to increase by 26 percent, while in the goods-producing sector, which includes agriculture, mining, construction, and manufacturing, there will also be an increase in job opportunities, albeit only about 12 percent. Manufacturing, an industry of special concern to policymakers and the general public, will share in that growth. The number of jobs in manufacturing is expected to grow 11.5 percent between 1979 and 1990. While less than the expected 19 percent growth rate for the economy as a whole, it is still a good gain. Notwithstanding the loss of over 2 million manufacturing jobs during the current recession, manufacturing is expected to be among the top three major industrial employers in 1990. Close to 24 million private sector jobs are projected for manufacturing, and that will, in fact, be exceeded only by wholesale and retail trade and "other services," with a projected 27 to 29 million jobs in each.

In terms of relative shares of GNP, the notion that the U.S. is moving from a goods- to a service-oriented economy is not accurate. The GNP is a measure of the value of all final goods and services produced in the economy and indicates how well the economy is performing. The share of GNP produced by a particular sector indicates its importance to the total economy and how it is performing in relation to other sectors. From this perspective, output of the goods-producing sector has accounted for about one-third of GNP since the late 1960's and is expected to do so until at least 1990 even though the relative proportion of jobs in it will be decreasing.

For those persons who will be entering the job market in the 1980's, these general trends mean that there will be opportunities in the goods-producing sector, even though more jobs will be created in the service sector. New coal miners, construction workers, and assembly line workers will be needed in the 1990's, although an even greater number of office and service workers will be required.

Defining "High Tech"

Although the term "high tech" is used frequently, press articles dealing with it do not always offer a definition. Sometimes, the term is defined as new products, especially those produced by the microelectronics industry, such as computer chips. Other times, "high tech" is meant to include the computers used in the production of goods or word processors used in the office, or automatic tellers in banks. All agree that high tech is a sector of the economy which is critical to the future growth of the Nation, but no one can really say what it is. This lack of a consistent definition can lead to inaccurate conclusions about the implications of high tech for employment.

First, I am going to describe our preliminary findings on the high tech sector, and then I'll turn to what is known and not known about the impact of high tech on employment.

The High Tech Sector

One of the reasons for undertaking a study on the high tech sector is to determine its role in the economy. The first requirement is to define what should be included in this sector. Some researchers have concluded that one way to determine its composition is to measure (1) the percent of an industry's output that is spent on research and development (R&D) and (2) the number of scientists, engineers and technicians. These measures are rough indicators of the extent to which firms view technological change as a way to remain competitive. The high tech sector in this context is comprised of those industries most involved in research.

Whether or not the high tech sector should be viewed as a major source of employment opportunities for the future is open to debate. To put its employment potential in perspective, the number of jobs projected for high tech as defined above will be less than one-quarter of the number employed in wholesale/retail trade in 1990, and only slightly smaller than employment in transportation, communications, and public utilities combined.

However, even if this sector directly employs relatively few people when compared with other industry aggregates, it has a strong growth potential. For this reason and, because of the sector's contributions to both the Nation's defense capability and its position in world markets, the preparation of people to work in it will undoubtedly continue to receive high priority. The sector contributes to the economy's growth since it is a major source of U.S. exports of manufactured goods. Of the 20 detailed manufacturing industries that had the largest dollar value of exports in 1981, 50 percent could be included in the high tech sector. Indeed, products of the high tech sector are a larger share of exports of the American manufacturing industry than of the other major industrialized nations. For example, close to 45 percent of exports of manufactured goods are from the high tech sector; for Japan, France, and Germany, the proportion is between 25 and 30 percent. Thus, it appears that some of America's success in exporting manufacturing goods is directly connected to the ability of its high tech sector to remain competitive in the world market. Maintaining this ability will depend in part upon the number and quality of our future scientists and engineers.

Technological Change

Technological change may be incorporated either in a new product or service or in a change in the process by which goods and services are made. A technological change within the production process may be incorporated into a new piece of equipment or into a new way of organizing existing equipment and workers. Both forms of technological advance in the production process may result in either increased output with no change in the number of workers, machinery, or raw materials required or the same amount of output with a decrease in the amount of labor, machinery, or raw materials required. The overall effect of a technological advance depends not only upon the nature of the innovation, but also upon the speed with which it is adopted by firms throughout the country.

Relatively little work has been done on the employment effects of technical changes. In some cases, recent research findings have so broadened the range of estimated impacts that policy directions become difficult to suggest. Therefore, the National Commission for Employment Policy is undertaking an investigation of some of the technological changes occurring in the workplace today and will analyze their likely impacts on the number and types of jobs in the future.

Many workers are already seeing the effects of the "new technology" in factories, offices, banks, and supermarkets, in the form of microcomputers, industrial robots, word processors, automatic tellers, optical character readers, and computer-assisted manufacturing and drafting. Largely because these innovations are recent, there is neither a complete inventory of occupations likely to be affected by them nor a body of research literature that details the ways occupations are likely to be affected. We do have, at present, some information on the impact of robots, but almost nothing on the impact on employment of the other types of technical changes.

Robots

As the Commission states in its Eighth Annual Report: The Work Revolution, robots represent one more step in the historical process of automating the workplace which began with the Industrial Revolution. Robots are machines that can do repetitive tasks with great speed and precision--and can be reprogrammed to carry out more than one task.

At present, there is no complete inventory of the number of robots in specific industries, or of the tasks they perform in the various industries. All that we know is that they are found primarily in the broadly defined metal working sector of manufacturing and that they generally perform such tasks as loading and unloading, spot painting, and welding. While projections about the number of robots likely to be in place by 1990 have been made, they range widely: for example, one study projected some 200,000; another, between 50,000 and 100,000.

The lack of knowledge about how many robots there will be, where they will be, and how many jobs one robot will do precludes definitive statements about the precise number and industry location of workers whose jobs may be adversely affected. In fact, it is possible that the emergence of this particular technological change will not result in large-scale job losses in the affected industries. It is also possible that the growth in job opportunities in these industries will not be as adversely affected as some expect. Because robots increase productivity, they enhance a firm's competitive position, and the demand for its products may be greater than it would have been had the new technology not been implemented. As a consequence, new jobs may be created and existing, albeit restructured, jobs saved. Of course, it is possible that there will be some regional and skill displacement if entire, technologically obsolete plants close and new ones, with robots, open elsewhere.

Although it is clear that robots will have some effect on employment levels, the extent of the impact is not clear. Generally, we expect the impact to be gradual, as is usually the case when implementing a technological change that requires large dollar investments. One thing we know is that institutions responsible for preparing people for tomorrow's jobs must work closely and continuously with firms where robots or other technical changes are being introduced. We believe that the Job Training Partnership Act encourages this closer coordination of training programs with employers' needs. Such flexible, market-oriented policies are called for to respond to technological change.

Paper Industry

Now let me turn to the paper industry as an interesting example of a basic industry with a good sales outlook and an interaction with technology.

The pulp, paper and paperboard industry has shown a significant rebound in output during the first eight months of the year. The production of paper is running 6.5 percent ahead of last year while paperboard output, reflecting the higher packaging needs of the nation today compared with a year ago, is running 7.3 percent ahead of the 1982 output.

In 1982, both of these major segments had experienced sales reversals with paper output down 2.0 percent and paperboard production down 6.9 percent from 1981.

Over time, the industry has experienced erosion in some markets but it has also benefitted from strong growth in others. Inroads from plastics have affected some packaging markets while the output of printing-writing papers have benefitted from the technological changes underway in the U.S. and from increased attention to promotional activities by manufacturers. The ever-growing installations of copiers and computers have increased the demand for communication papers. Contrary to some expectations, our experience to date indicates that the demand for paper is benefitting from the increase in communications resulting from the greater use of computers and copiers.

The industry's employment during the past decade has shown a fairly steady trend, with only modest changes resulting from cyclical swings in business. In 1970, employment in the pulp, paper and converting industries totaled 705,500; it was 692,800 in 1980 and in the recession year 1982 had fallen to 662,000.

The paper industry is a capital intensive industry. Outlays for plant and equipment are now in excess of $6 billion a year; they were half that level only seven years ago and can grow to $10 billion a year by the end of the decade. We have spent these large sums to improve our productivity, to change the characteristics of the product in order to meet changing market demands, and to provide for our raw material, trees, in an efficient manner. The extensive forest lands in the U.S., coupled with large investments by U.S. manufacturers in them, have made the U.S. paper industry the least-cost producer worldwide. This cost advantage is offset at present by the high value of the dollar in relation to some currencies. For example, we compete with the Scandinavians in the sale of pulp and recent series of unilateral devaluations of the Krona by our Swedish competitors has more than offset our competitive advantage.

Most of the industry's products service the needs of our domestic economy but our industry has over the years begun to capitalize on its cost advantage by increasing exports. For example, in 1970, exports of paper and paperboard, which is the basic packaging material for corrugated boxes accounted for 5.4 percent of production; by 1980 that figure had increased to 8.2 percent. In 1982, it retreated to 6.9 percent, reflecting many influences including the recession in foreign countries, the high value of the dollar and other barriers to trade.

Our demand prospects, both domestic and foreign, remain favorable for the next decade. We believe the overall demand for the industry's products will be paced by the growth in general business activity as well as increased export initiatives.

Our problem is capital--availability and cost. The industry has clearly demonstrated even during the recent recession that it had confidence in its future through its aggressive investment. Despite a severe shortage of cash during the past two recession years, the industry maintained high levels of investment through several financial adaptations, such as the sale of assets, higher borrowings and when it was available, leasing as a financing vehicle. These sources of funds have been foreclosed to a large extent. It is essential that new avenues of capital availability be opened up to the industry.

Cash flow generated and borrowed by this industry is rapidly transferred into job creating investments, both for the industry and its suppliers. The industry's cash flow is affected by tax policies. In that regard, we seek policies that will generate additional cash flow for investment through faster recovery of investments, flexible and full use of tax credits and continued support for increased forest productivity through appropriate tax policies. In the export area, we need a viable tax-based export incentive to replace DISC.

Summary

The unique combination of recession, excessively strong dollar, and high interest rates has exacerbated disruptions in the economy as reflected in the production performance of some industries such as steel and construction machinery. To seek better solutions to these urgent problems is a high priority which will relieve some of the existing imbalances in employment and output. For the longer run, the Commission's study in 1984 should provide more information on the changes occurring in basic industries and the direction of those changes. What we learn will, we hope, provide guidance in the development of policies dealing with preparing people for the jobs in the future. All we can recommend at present is that such policies be flexible enough to permit programmatic changes that meet emerging needs.

I thank you for inviting the National Commission for Employment Policy to testify today.

Senator DOLE. I guess just first speaking as Commissioner for National Council for Employment Policy it might be well to have in the record whether or not you believe that the current Federal commitment to retraining is adequate to meet the needs of the structurally unemployed over the next 5 to 10 years.

Ms. PACE. Well, we think it's a great step forward. The commission is charged with monitoring its progress and its impact on the economy. We have begun appropriate studies and will be able to provide enlightenment on that.

Senator DOLE. That might help because I think one criticism and one reason there is reluctance to appropriate money for anything in that area is that you see so much of it frittered off that doesn't really help anyone who is out of work and needs retraining. It goes to plush offices and administrative cost and travel. By the time the working man or working woman who is out of work gets around to retraining, they say, well, we don't have enough money; we need a bigger appropriation. So I hope it is going to be a barebones review that you do so that we will have the hard facts. It's difficult enough to spend taxpayers' money when they have no idea where it is going to wind up.

Ms. PACE. Well, we share that concern. With the private partnership aspect of the new job training program and the kinds of studies that are being instituted to determine what the private sector will need, I think this adds a practical and fruitful aspect to this kind of training program.

Senator DOLE. Do you think the so-called decline, in basic industries has been exaggerated by the recession? We get the feeling that everything is about to collapse. I mean all these people running to Washington saying we have got to have this; we have got to have that. There is a lot of discussion in the press that we are on the threshold of some great disaster as far as demand and employment moving away from manufacturing. Do you see that it is as bad as we hear or read?

Ms. PACE. I think we have suffered some permanent loss, but I think it has been exacerbated by the recession, by the excessive value of the dollar and the high interest rates.

I think if we could come out of this period with a balanced recovery, we will be talking less about the problems of the basic industries. A lot of good things have happened as a result of the recession and efforts to reduce costs in U.S. manufacturing. I think this is the very fundamental factor in fighting inflation. And there is a real commitment on the part of management to hold costs down. They are getting some cooperation from labor. We need more. And the new programs that involve labor in these cost concerns, are going to be very productive. I have more faith in the ability of this country to hold its costs down and to increase its productivity during the next 2 years than we have had in other periods of recovery.

I think this is going to help the basic industries enormously.

Senator DOLE. Earlier this year we had a study put together on taxation of certain industries. And I must say that the paper and wood products have a negative effective tax rate. So I hope that they may become taxpayers. Their treatment can't be much more generous.

Ms. **Pace**. Yes.

Senator **Dole**. They have a 14.2-percent negative rate now as compared to chemicals with a 29 percent effective rate; electronics 29-percent; food processors, 26 percent; industrial and farm equipment, 24 percent; metal manufacturing, 9.8 percent; motor vehicles, 47 percent; paper and wood products, minus 14.2 percent, which is the highest negative rate.

Ms. **Pace**. Basically, the reason for that unique performance was the large reduction in the profitability in our sister industry, the building products industry, which is affected by housing activity. Many of our companies produce wood products as well as paper. The profits are reported as one figure. The decline in building products profits pulled down the total.

Furthermore, as I indicated earlier, the paper industry has maintained large investments despite the recession. Consequently, the investment tax credits and other tax carryover items, when compared with those low profits, make the liability seem negative.

This has not been our history in the past. And, hopefully, it won't be our history in the future, if we can bring the housing industry back to more normal levels. This combined with a better outlook for paper, ought to increase profits and taxes. We ought to be good contributors to the public coffers in the future.

Senator **Dole**. I'm not saying these studies are conclusive. They are for 1981. But as we look around for those who are seeking more tax subsidies or tax advantages, we have to take a look at what they receive now and what they may be paying now. In your area, they are not paying anything.

Ms. **Pace**. Well, I think if you were to separate paper from housing—and we have tried to do this over and over again—you would see that the paper industry is making its contribution. I go back again to the fact that this industry is a reliable investor. It has demonstrated over and over again that every dollar of cash flow it gets plus what it can borrow judiciously is put back into investment. That's why we have been able to maintain our competitiveness.

We have had a lot of competitive assaults on us. But we have kept up by investing and becoming the least cost producer worldwide. So these are the benefits of the investment process that are real.

Senator **Dole**. Well, we appreciate it very much. And we will look forward to working with you in both capacities.

Senator Chafee, do you have any questions?

Senator **Chafee**. No questions.

Ms. **Pace**. Thank you very much, Senator.

Senator **Dole**. We have a panel consisting of Andrew Hill, chairman of the board, Hill Petroleum Co., Houston, Tex., and president, American Independent Refiners Association; Dennis P. Bedell, chairman of American Mining Congress Tax Committee. We will be happy to hear from them.

STATEMENT OF ANDREW E. HILL, CHAIRMAN OF THE BOARD, HILL PETROLEUM CO., HOUSTON, TEX., AND PRESIDENT, AMERICAN INDEPENDENT REFINERS ASSOCIATION, WASHINGTON, D.C.

Mr. **Hill**. I am Andy Hill, Senator, chairman of Hill Petroleum Co. We are an independent refiner, petroleum refiner. We have offices in Houston and a $165 million refinery located in Louisiana. And we are producing gasoline, jet fuel, diesel oil and, of course, the other side products of the refining process.

I am here today testifying on behalf of the American Independent Refiners Association. I have submitted a detailed testimony, and just have a couple of brief comments here.

Senator **Dole**. We will make the entire statement part of the record.

Mr. **Hill**. Thank you, Senator.

[The prepared statement of Andrew E. Hill follows:]

American Independent Refiners Association

Testimony of Andrew E. Hill, President
American Independent Refiners Association
Before the
Senate Committee on Finance
Subcommittee on Economic Growth, Employment
and Revenue Sharing

THE DOMESTIC REFINING INDUSTRY-PROSPECTS FOR THE FUTURE

September 23, 1983
9:30 a.m.

114 Third Street, S.E. Washington, D.C. 20003 202/543-8811

Petroleum Refining as a Basic U.S. Industry

Mr. Chairman, the purpose of this hearing today is to focus on causes for the decline in certain basic U.S. industries and to determine whether our government has a proper role to play in maintaining a basic infrastructure in certain industry sectors. The American Independent Refiners Association is testifying today to send to the Congress a warning signal regarding the state of the U.S. refining industry, an industrial sector presently in the middle stages of a decline which most analysts expect will continue for the foreseeable future.

The petroleum refining industry is a major resource processor, supplier and user. As in other basic U.S. industries such as steel, cement, and paper, refineries process raw materials into finished or semi-finished products. The major difference with refining, however, is that the result, petroleum products, constitute the basic input necessary for almost every other U.S. industrial process.

The refining industry is highly capital intensive, accounting for well over $19.2 billion of total invested capital in 1976. Department of Commerce figures show an expenditure of over $30 billion for new refining assets during calendar year 1980 and over $6.2 billion during 1982. Refining added over $22 billion to U.S. GNP during 1980, or close to five percent of total U.S. production.

While not as labor intensive as some U.S. manufacturing industries, refining employed some 103,000 persons in 225 refineries during 1982, down from a high of 155,000 employees in 323 refineries during 1978. This job loss is concentrated in a highly skilled work force however, as professional and technical workers constitute 44 percent of total employment in petroleum refining compared with 29 percent for all U.S. workers.

Research and development expenditures by the refining industry during 1980 amounted to $1.6 billion, roughly 4 percent of total U.S. research expenditures. Interestingly however, U.S. government's assistance in this area amounted to only 10 percent of total refinery R & D expenditure compared with an average of over 25 percent government assistance to the total U.S. research and development effort.

The United States currently relies upon petroleum products to supply over forty-two percent of its total energy demand.* This figure excludes natural gas as an energy source. Since the period of the 1960's the U.S. has always been dependent upon varying levels of imported crude oil to meet our needs. Consumer demand and fundamental geology have dictated this dependence. Yet, as a nation, we maintained a strong refining base within our national borders which was capable of taking crude oil from any available source, domestic or foreign, and producing requisite amounts of motor fuels, heating fuels and petrochemical feedstocks for both civilian and military purposes. Unfortunately this picture is beginning to change.

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*Oil and Gas Journal, July 25, 1983, p. 127.

AIRA does not advocate a comprehensive affirmative program of government intervention designed to ensure that the United States will be totally self sufficient in petroleum refining for the remainder of this century. This does not mean however that the importance of the domestic refining industry to the nation as a whole should be ignored. The industry is in deep economic trouble at home, and faces a growing threat from subsidized foreign competition abroad.

Causes for the decline of the U.S. refining industry are varied and complex and the solutions to these problems will be equally so. I wish to emphasize in this regard that the U.S. petroleum business is not a monolithic industry capable of oversimplification and easy categorization. Sectors of the petroleum industry are much weaker than others. The refining industry, with its long construction lead time and requirements of huge capital outlays for modernization of fixed assets[*] is not capable of as rapid a turnaround as is the exploration and production sector, which is sensitive to even short-term fluctuations in crude oil prices and interest rates.

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[*] The National Petroleum Council's 1980 "Refinery Flexibility Study" estimated a lead time of 43 months necessary to bring on new process units necessary to process high sulfur crude oil. Vol. 1 p. 22.

The Committee should, in making any recommendations for a sound refining policy, view the problem from a long-term perspective. It is our hope that the problems of other basic U.S. industries in a more advanced state of decline will provide valuable guidance in attempting to prevent future deterioration in this most vital U.S. industrial sector.

The U.S. Domestic Refining Outlook -- An Industry in Decline

The U.S. domestic refining industry is presently experiencing the worst economic climate in recent memory. The cyclical downturn in the U.S. economy combined with crude oil costs which remain very high relative to refined product prices have, in the last several years, forced the idling of a very substantial proportion of operable U.S. distillation capacity. Statistics compiled by the U.S. Department of Energy and the American Petroleum Institute document this decline. In the fourth quarter of 1981, API estimated U.S. refining capacity stood at 18.7 million bbls/day. API figures for the second quarter of 1983 show 16.2 million bbls/day of operable capacity, a decline of 13.3 percent. API's latest report shows that inoperable capacity* increased by 66% during the one year period from August 1982 to August 1983.* AIRA's own figures show that 2,469,869 bbls of operable capacity at 103 refineries has been scrapped thus far during the 1981-1983 period. As best as can be determined, thirteen refineries (801,500 bbls/day of capacity) operated by major integrated companies were shut in during the last two and one half years together with some ninety facilities (1,668,369 bbls/day of capacity) owned by independent refining companies. Notwithstanding the closure of so many refineries, the capacity utilization rate of facilities still in operation has dropped from a high of 87.9 percent in 1978 to an all-time industry low of 69 percent on average during the January-June 1983 period.* Predictions for a continued decline in U.S. demand for petroleum products of up to 1 percent during 1983 makes further closure of operable U.S. refining capacity almost inevitable.

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*Inoperable refining capacity is defined as that capacity which cannot be placed in operation within 30 days, or within 90 days if under repair.

*Oil and Gas Journal. August 1, 1983, p. 46.

*Midyear Review and Forecast, Oil and Gas Journal, July 25, 1983, p. 114.

Ironically the closure of so much of U.S. distillation and downstream processing capacity is occurring at a time when U.S. refiners are facing the need to upgrade facilities just to keep pace with the declining quality of world-wide crude oil slates. Existing supplies of crude oil are deteriorating in gravity and increasing in sulfur and heavy metal content. More sophisticated process units will be required during the decades of the 1980's and 1990's just to refine existing volumes of gasoline, jet fuel and other petroleum products from a representative barrel of crude oil. The cost of constructing and operating new refinery units has dramatically increased in recent years. The Nelson refinery construction cost index has risen from a base level of 822.8 in 1980 to a level of 1008.8 in March of 1983, an increase of 18.5 percent. During the same period the cost of operating a refinery increased from a base figure of 457.5 to 556.9, an increase of 17 percent.[*]

During the current period of weakening product prices and increasing operating and construction costs those refiners who must expand the processing capabilities of their plants to remain competitive find themselves unable to finance new projects without subsidizing refinery investment from other, more profitable businesses. Major integrated oil companies have been more successful in this regard than those firms whose only

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[*] As reported in the Oil and Gas Journal of August 1, 1983, p. 75.

business is in refinery processing. Investment figures bear out the thesis that most of the investment to heavy up and sour up existing refinery capacity has occurred in larger refineries operated by integrated companies. Vertical concentration in the refining segment of the oil industry has increased during the last two years and is likely to continue in the years ahead.

The reality of high capital costs poses a very serious obstacle to domestic refiners who must invest now in the reconfiguration of existing refineries to meet changing demands of U.S. consumers for petroleum products. A July 1980 study by the U.S. Library of Congress concluded that as much as $20 billion in new refinery investment may be needed over the next decade -- not to increase capacity -- but just to upgrade existing plants to produce increased amounts of lighter petroleum products such as unleaded gasoline and solvents from heavier crude oils.* To the extent that the domestic industry is unable to make these investments because of governmental regulations, insufficient rates of return or inadequate capital, the resulting deficiency must be dealt with either by importing increased amounts of refined product or tolerating spot shortages of certain products.

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*U.S. Refineries: A Background Study, Congressional Research Service, July 1980, 96th Cong. 2d Sess. Com. Print 96-IFC54, p. 7.

Foreign Refining Competition During the 1980's

While U.S. imports of crude oil have varied from a high of almost 9 million bbls/day during 1977 to a low of slightly over 4 million bbls/day today, U.S. based refineries have historically processed both domestic and imported crude oil into the bulk of petroleum products supplied to U.S. consumers. Indeed, total U.S. imports of refined petroleum products have never exceeded 10 percent of total U.S. demand. Petroleum refining, as a basic U.S. industry, has always been depended upon in the past to supply practically all of U.S. product demand for both military and civilian purposes. Unfortunately, this historical relationship is in greater danger today than ever before.

At a time when a worldwide surplus of refining capacity exists, OPEC nations are presently engaged in the construction of a new generation of export-oriented refineries. The OPEC Downstream Project of the Resources Systems Institute projects that OPEC refining capacity in the Gulf region alone will likely increase from 2.9 million bbls/day in 1980 to 8.5 million bbls/day by 1990. This new capacity is largely aimed at markets in Western Europe, the United States and Japan and is being built in an economic environment that will not support similar investments made in the United States.

The world oil market is, in the words of one expert, "on the verge of witnessing a major change in the oil trade: [the] emergence of a product market and a decline in crude trade."* Product exports which currently constitute 6-7% of total OPEC exports are projected to increase to around one-third of total OPEC exports by 1990. OPEC refinery expansion is being financed in part through profits obtained from crude oil sales and partially through investments from large U.S. firms (primarily integrated oil companies) who are being accorded guaranteed access to crude oil in exchange for investing in and marketing the offtake from the new export refineries.

The implications of this shift in the crude oil/product trade have most serious implications - both for the U.S. domestic refining industry and for U.S. national security generally. The crude oil embargoes of 1973 and 1978 serve to illustrate the devastating impact on the U.S. economy of both a severe and a moderate crude oil supply disruption. Even so, U.S. refineries were capable of adapting to new crude sources during these periods by adjusting yield slates to produce proportionately more or less of a given petroleum product. Dependence upon imported petroleum products leaves any nation state in a much more vulnerable position than reliance upon imported crude oil. Reliance upon foreign refining for finished product will restrict further the ability of the United States to produce the mix of motor gasoline, aviation jet, and diesel fuels which may be needed in disproportionate amounts during a future crisis.

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*Petroleum Intelligence Weekly, Wide Impact Seen for OPEC's Refining Push, Dr. Fereidum Fesharaki, June 22, 1981.

Unlike a precipitous political or military upheaval in the Middle East, the timing of which is uncertain at best, the structural changes caused by OPEC's downstream move into petroleum refining are continuing at a steady, predictable pace.

A careful analysis reveals that the 1973 OPEC crude embargo was largely defeated due to the ability of oil companies to exchange crude among themselves, thereby avoiding destination controls imposed by the producing nations. It must be remembered that 90% of OPEC crude moved through the major oil companies in 1973 and that transportation and refining of crude oil was simlilarly in private hands. The situation is much different today. Currently OPEC countries market over half of their crude directly through state controlled companies. Increasing their control over the refining of captive crude production and transportation of petroleum products to ultimate consignees will greatly facilitate the "policing" of any future petroleum embargo by those imposing it. Ironically, the IEA import-sharing arrangement which is designed to cope with short-term crude oil embargoes is likely to prove impotent in dealing with a mid-to-late 1980's product embargo.

These structural changes should come as no surprise to U.S. policymakers, for they mirror precisely the expansion and integration of U.S. oil producers downstream into refining and marketing during the 1950-1970 period. Any large crude producer, whether a private company or a state-controlled entity, will over time, attempt to capture the additional value added by refining captive sources of crude production. What our policymakers must address is whether such integration is desirable when it occurs in a sector that is so critical to the daily functioning of the U.S. economy and when it is being carried out in an inherently unstable part of the world which will be difficult to defend should a crisis arise. The destruction of the 700,000 bbls/day Abadan refinery in Iran during the recent upheaval there graphically illustrates the vulnerability of a refining complex to sabotage and attack. If the crude oil fields of Saudi Arabia are thought to be hard to defend, the defense of Saudi refineries will be infinitely more difficult.

U.S. Oil Import Policy

Perhaps no other single aspect of U.S. tax or trade policy affects the viability of U.S. refining companies more than U.S. oil import policy. From 1959 until June of 1979 the United States maintained a more or less constant policy of adjusting the level U.S. imports of crude oil and petroleum products.* Current U.S. export policy permits petroleum product exports while restricting crude oil exports; oil import policy is essentially unrestricted with respect to both crude and produce. With the Congress seeking new sources of additional revenue for the purpose of reducing large deficits, many have urged the imposition of an import fee on imported crude oil. Proposals in both the 97th and 98th congress have suggested fees ranging from a low of $2 per barrel to as high as $10 per barrel. Though present support for an oil import fee is not growing, support for such a new oil tax remains popular with many policymakers in the Congress and the Administration. Estimates by the Joint Committee on Taxation and the Congressional Budget Office abound on the various aspects of a fee, such as the total amount of revenue a fee would raise, the extent to which such a fee would favorably impact the U.S. balance of trade and the degree to which a fee might be passed forward to consumers at the retail level. The answers to these questions depend largely upon total world demand for petroleum and the reaction of foreign oil producers, factors very difficult to accurately predict over long periods of time.

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*President Eisenhower, in 1959, pursuant to Presidential Proclamation 3279 (24 F.R. 1781) instituted the Mandatory Oil Import Program, a system placing volumetric quotas on U.S. imports of foreign oil. This "quota" system gave way in 1973 to an oil import license fee system (38 F.R. 9645) which was variously adjusted during the decade of the 70's before President Carter in 1979 (Presidential Proclamation 4655) reduced license fees to zero. Currently, only very small differential customs duties are being collected on crude and product.

Domestic refiners typically vary in their support for a crude oil import fee depending upon whether a given refiner believes that the fee can be passed forward in the wholesale and retail marketplace. As refining margins are very low, if not negative in most markets, the majority of U.S. refiners would not presently support a fee on crude oil alone. What U.S. refiners have long needed however, is a differential tariff on imported petroleum products. In the event that the Congress does, at some future point, determine to enact a tariff on imported oil, it is critical that any fee placed on crude oil be accompanied by a commensurately higher fee on imported refined petroleum products.

A 1980 study by the National Petroleum Council compiled cost data for domestic, Caribbean and European refinery operations together with the costs of delivering the products refined to the east coast of the United States. The study concluded (after factoring out the effect of U.S. price controls then in existence) that U.S. refiners were operating at a competitive disadvantage of almost $1.20 per barrel of crude processed. The study did not take into account the higher environmental and other regulatory costs which U.S. refineries must recover in their operations. It should be remembered that U.S. air and water discharge standards are among the most stringent in the world, that U.S. refineries must comply with provisions of OSHA, and are restricted by the Jones Act to shipping refined products in U.S. waters via more expensive U.S. flag tankers.

For all of the mistakes associated with the period of petroleum price controls, controls did have the indirect effect of offsetting prior competitive disadvantages to a large degree by providing U.S. refiners with lower average crude oil costs relative to foreign competitors. Since decontrol in January of 1981 however, these competitive disadvantages have begun to reassert themselves. It is no small coincidence that the downstream push of OPEC into refining is occurring at a time when the playing field between U.S. and foreign refineries is so uneven.

While it will take time for imported refined products to capture a substantial share of the U.S. product market, all of the conditions are in place for this development to occur. If imported product displaces a large portion of the U.S. output due to U.S. refinery shutdowns and unequal competitive conditions, a "quick fix" will not be possible. Shut in refineries are not easily brought up as is the case with a properly garaged automobile. Refineries are designed and constructed for continuous operation and if a facility is mothballed for too long, the facility will need a major overhaul which takes a long period of time and be very costly.

There is one small indication that U.S. policymakers are becoming cognizant of the need to view U.S. oil import policy from a longer perspective. Domestic refiners were very relieved to note that final language of the Caribbean Basin Initiative did not contain a duty free exclusion for petroleum products as did the original measure introduced by the Administration during the last session of Congress. While existing duties on petroleum products are very small, removing these custom duties would have exacerbated further the competitive disadvantages presently faced by U.S. refiners from offshore competition in the Caribbean area.

To summarize briefly, AIRA believes the industry will continue to oppose the implementation of an import fee on crude oil. However, if a fee is adopted, it is imperative that it be accompanied by a higher differential fee on imported petroleum products. The amount of the fee on a given product should be established to tax proportionately the additional value added to crude oil by refining. A product fee should have as a goal the leveling of the playing field between U.S. and foreign competition. AIRA feels at present that an appropriate fee would be between $2.00 and $2.50/bbl given world market conditions.

Irrespective of a decision to levy a tariff on crude oil, the adequacy of existing customs duties on petroleum products should be reexamined by Congress and the Administration, particularly in light of OPEC's ongoing downstream entry into crude oil processing. An excellent way to begin this process would be through the inclusion of independent refiner representation on the Energy Sector Advisory Group (ISAC) recently activated within the International Trade Administration of the U.S. Department of Commerce. This would allow domestic refiners to make their concerns known to appropriate officials within the Special Trade Representatives' Office and the U.S. Department of Commerce and would permit the data gathering necessary for a formal recommendation to the Congress on a coherent U.S. refining policy.

Tax Considerations

As mentioned earlier, enormous capital investment in new refinery process units will be needed during the next ten years just to enable U.S. refiners to handle crude oils of deteriorating quality in an environmentally acceptable way. The revised depreciation and investment tax credit provisions of the Accelerated Cost Recovery System (ACRS) adopted by Congress during ERTA will assist many refiners, particularly integrated companies, in making these necessary investments. However, those small or independent refiners who have made no money or suffered losses during the last three years cannot justify any new investment in the present economic climate even with favorable tax rules. AIRA recognizes that this problem is not unique and is faced by many other independent companies who are attempting to compete in capital intensive basic industries during a period of marginal profitability. We would support efforts by this Committee to make a portion of the investment credit refundable for those companies that are unable to currently utilize the credits and yet must make new investments in order to remain competitive.

Mr. Chairman, this concludes my remarks. I will be happy to respond to any questions you or other members of the Subcommittee may have.

I have attached to my statement a copy of the current membership and location of AIRA's refining members. I would ask that this document be made a part of the record.

HYDROCARBON PROCESSING IN OPEC COUNTRIES: EXCESS CAPACITIES AND READJUSTMENT PAINS IN THE WORLD REFINING INDUSTRY*

By

Fereidun Fesharaki**
David T. Isaak**

For Presentation to the Conference on
International Energy Markets: The Changing Structure
International Association of Energy Economists
Cambridge University
June 28-30, 1982

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*This paper draws heavily on the conclusions of the authors' new book, OPEC, the Gulf and the World Petroleum Market: A Study in Government Policy and Downstream Operations, Westview Press, Colorado (forthcoming, 1982).

**Dr. Fereidun Fesharaki is Coordinator, and David T. Isaak, Assistant Coordinator of the OPEC Downstream Project, Resource Systems Institute, East-West Center, Honolulu, Hawaii 96848, USA

The future of the world refining industry is greatly dependent on demand growth and demand mix of petroleum products. On the supply side, there are three elements which should be taken into account; existing refining surplus, new construction in oil importing countries, and the massive expansion in OPEC nations. Like demand, aggregate refining supply data do not help much, since it is the supply mix, i.e. the degree of complexity of the refineries, which can indicate the match or mis-match of the oil product supply with demand. It is only through such disaggregation that the types of refineries in danger can be observed.

Petroleum Product Demand

Energy demand forecasting has become, along with microelectronics, one of the growth industries of the 1970s; and there are few signs of a recession in this market in the coming decade. Techniques for assessing future energy demand have become steadily more sophisticated—although whether there has been a concommitant increase in the accuracy of forecasts is open to question.

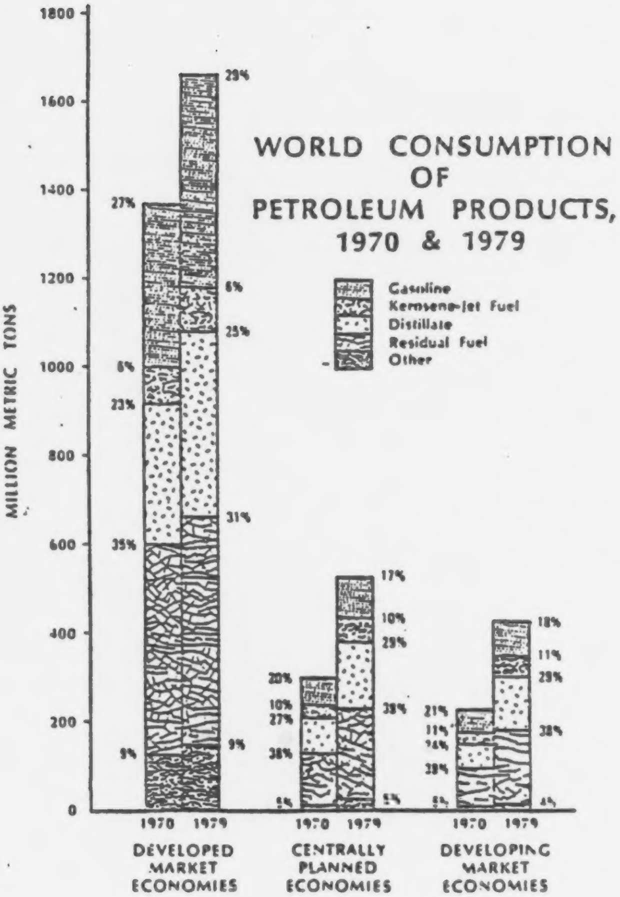
Unfortunately for analysts working on the petroleum market, however, most forecasters have concentrated on projecting demand for total primary energy or demand for energy by major energy sources. Few specific forecasts of demand for individual petroleum products are available. Apart from the inconvenience that this causes for petroleum market analysis, this also may represent a serious methodological gap in forecasts of crude oil demand. Consumers do not demand crude oil, but rather a mix of jointly-supplied goods manufactured from crude oil. Both the pattern of demand and the ability of refineries to adjust yield patterns are constantly changing. Moreover, non-oil energy sources are not, in general, substitutes for oil, but instead act as substitutes for particular oil products. In the long term, forecasts of crude oil demand are unlikely to be accurate unless they explicitly account for product demand patterns and the production capabilities of the refining industry.

We do not feel qualified to remedy this problem. For our purposes here, however, it is necessary to discuss future oil product demand patterns. Owing to the lack of comprehensive coverage, our presentation will be far from definitive; at best, we can only suggest the general trend of demand. Hopefully other economists will devote more attention to these issues in the next few years than they have in the past.

Figure 1 shows the world demand for petroleum products divided amongst the broad economic categories of the United Nations.[1] Aggregation at this level, of course, masks the significant differences between countries within the same economic group; nonetheless, it provides some indication of the variation in demand patterns between countries at different levels of development.

There are over two thousand petroleum products sold in the United States;[2] the bulk of demand, however, is concentrated in a few generic categories of products: Gasoline, naphtha, kerosene (including jet fuels), diesel oils, and heavy fuel oils. For purposes of this discussion, we will treat oil products in three broad categories based on their specific gravities and boiling points: "Light" products, including gasoline, naphtha, and liquefiable gases; "Middle Distillates," including kerosene and diesel oils; and "Heavy" fuels, including vacuum gas oils and residual fuel oils.

The most comprehensive forecast of oil product demand we have seen is the forecast prepared for the International Energy Agency by Petroleum


WORLD CONSUMPTION OF PETROLEUM PRODUCTS, 1970 & 1979
Gasoline
Kerosene-Jet Fuel
Distillate
Residual Fuel
Other
MILLION METRIC TONS
1800
1600
1400
1200
1000
800
600
400
200
0
29%
27%
6%
25%
6%
23%
31%
35%
9%
9%
17%
10%
29%
20%
10%
27%
38%
38%
5%
5%
18%
11%
29%
21%
11%
24%
38%
38%
5%
4%
1970
1979
DEVELOPED MARKET ECONOMIES
1970
1979
CENTRALLY PLANNED ECONOMIES
1970
1979
DEVELOPING MARKET ECONOMIES

Economics Limited.[3] This is shown as Table 1. Although limited to the OECD nations, the dominant role of these nations in world oil consumption means that even small changes in the demand pattern can have larger effects than major changes in patterns elsewhere.

The IEA/PEL forecast envisions lowered demand for all product groups in the OECD nations as a whole. The demand for heavy fuel oils is projected to drop far faster than demand for other products, resulting in an increased market share for light products and middle distillates. Although the methodology used in arriving at these forecasts is not clear, the more rapid decline of heavy fuel oil is probably intended to reflect the increasing substitution of other energy sources in electrical generation and industrial heating. Light products and middle distillates are dominated by transport fuels, for which there are few alternatives to petroleum;[4] most substitutes for oil are in competition with the heavy fuel oils.

We have not seen petroleum product demand forecasts for Eastern Europe and the Soviet Union. We are inclined to believe, however, that many of the same forces at work in the OECD nations will make themselves felt within the centrally-planned economies. Despite the controversy over future levels of Soviet oil exports to the West,[5, 6] it seems clear that the Soviet Union will be attempting to maintain some level of exports as a source of hard currencies; similarly, the Eastern European states should be attempting to control domestic consumption to minimize the need to purchase oil on the international market. In both cases, there will be pressure to substitute other sources for oil, and, as in the OECD, most of the possible alternatives strike at the heavy fuels category. Thus, although it is not possible to quantify the shifts in

TABLE 1
IEA/PEL Projections of Product Demand in OECD Countries

Area	Product Group[b]	1979	1985	1990
U.S./Canada	Light	8.10	7.33	6.79
	Middle	4.95	4.22	4.43
	Heavy	5.56	5.01	4.33
	Total	18.61	16.59	15.55
Europe	Light	3.59	3.68	3.99
	Middle	5.10	4.80	4.85
	Heavy	5.58	4.34	4.18
	Total	14.27	12.82	13.02
Japan	Light	1.29	1.11	1.21
	Middle	1.33	1.31	1.41
	Heavy	2.53	2.21	2.04
	Total	5.15	4.63	4.66
Australia/New Zealand	Light	0.32	0.39	0.41
	Middle	0.22	0.17	0.21
	Heavy	0.20	0.14	0.14
	Total	0.74	0.70	0.76
Total OECD	Light	13.30	12.51	12.40
	Middle	11.60	10.50	10.90
	Heavy	13.87	11.70	10.69
	Total	38.77	34.71	33.99

Source: International Energy Agency/Petroleum Economics Ltd., Refinery Flexibility in the OECD Area, 1981.

[a] Converted from original figures in metric tons.

[b] "Light includes LPG, Gasolines and Naphthas; "Middle" includes Kerosene, Diesel and Light Heating Oils; "Heavy: includes heavy fuels nd miscellaneous.

consumption patterns that will occur, it seems reasonable to predict increasing market shares for light products and middle distillates in the centrally-planned economies.

The future role of OPEC oil consumption in the world oil market is a source of some concern, since rapid increases in OPEC domestic demand could curtail OPEC oil exports. Considerable apprehension was generated by the forecast issued by the OPEC Secretariat[7] shown in Table 2. More recent studies, however, that have estimated OPEC demand on a product-by-product basis, project far lower levels of demand than those envisoned by the OPEC Secretariat. These studies include the IEA/PEL study,[8] which predicts OPEC consumption by region, and the Johnson and Totto forecast [9] which attempts to estimate future consumption for each OPEC country. These projections are shown as Tables 3 and 4. Both of these forecasts are considerably lower than the Secretariat forecast; furthermore, the Johnson and Totto study envisions even further decreases in demand if OPEC nations raise domestic oil product prices in real terms.[10] Since our analysis requires country-specific product demand forecasts for the Gulf nations, and because we are in agreement with the basic assumptions employed in the study, we have employed the Johnson and Totto projections as our OPEC demand forecast throughout this paper.

OPEC product demand is projected to be low

The forecast sees rapidly rising demand for all products within the OPEC nations. Contrary to the situation elsewhere, however, these projections see an increasing market share for heavy fuel oils, and a decreasing share for light products.

Future oil consumption in non-OPEC less developed countries (LDCs) remains a puzzle, and has received far less attention than it deserves.

TABLE 2
OPEC Secretariat Projections of
OPEC Countries' Oil Consumption
(Figures in thousand b/d)

Country	1985	1990
Algeria	270	450
Ecuador	90	120
Gabon	30	50
Indonesia	590	920
Iran	1,040	1,660
Iraq	340	530
Kuwait	60	90
Libya	170	310
Nigeria	270	420
Qatar	10	20
Saudi Arabia	460	840
UAE	70	110
Venezuela	500	790
OPEC	3,900	6,310

Source: ~~S. R. Kadhim and A. Al-Janabi (1979).~~

Adapted from Kadhim, S.R., and
A. Al-Janabi "[illegible] [illegible]
in OPEC [illegible]
Vienna 1979

TABLE 3
PEL Forecast of OPEC Product Consumption
(Thousand b/d)

	Middle East			Africa			Latin America			Far East			Total OPEC		
	1979	1985	1990	1979	1985	1990	1979	1985	1990	1979	1985	1990	1979	1985	1990
Gasoline/Naphtha	230	515	620	105	190	280	185	245	290	65	140	170	585	1090	1360
Middle Distillates	500	975	1150	145	290	440	105	225	300	215	335	385	965	1825	2275
Residual Fuel Oils	310	450	500	40	85	130	60	75	95	50	90	105	460	700	830
Others	65	110	130	70	85	100	45	55	65	25	35	40	205	285	335
Total	1105	2050	2400	360	650	960	395	600	750	355	600	700	2215	3900	4800

Source: International Energy Agency/Petroleum Economics Ltd., Refinery Flexibility in the OECD Area, 1981.

Note: Of total increase in OPEC demand, it has been assumed that around 30 percent will be accounted for by light ends, 50 percent by middle distillates, 15 percent by fuel oil and 5 percent by other products.

TABLE 4
Johnson and Totto Projections of OPEC Demand[a]--The Reference Case
(Figures in thousand b/d)

	1985				1990			
	Light	Middle	Heavy	Total	Light	Middle	Heavy	Total
Algeria	37.3	50.5	27.7	115.5	45.5	61.4	36.7	143.6
Ecuador	41.9	42.5	16.6	101.0	58.4	73.1	22.0	153.5
Gabon	2.2	18.3	16.4	36.9	3.2	26.2	23.3	52.7
Indonesia	88.3	291.0	109.3	488.6	115.2	365.5	131.7	612.4
Iran	93.5	351.1	126.6	571.2	121.0	472.5	178.0	771.5
Iraq	65.3	187.3	122.1	374.7	84.5	241.7	158.7	484.9
Kuwait	34.5	28.6	5.3	68.4	43.1	36.8	6.8	86.7
Libya	30.3	62.0	30.5	122.8	41.9	85.5	43.4	170.8
Nigeria	87.7	94.2	22.2	204.1	102.7	109.7	25.8	238.2
Qatar	4.2	5.3	-	9.5	4.8	6.2	-	11.0
Saudi Arabia	104.7	218.7	279.5	602.9	128.0	267.8	410.1	805.9
UAE	18.1	84.9	3.9	106.9	31.8	170.3	7.8	209.9
Venezuela	245.3	161.9	-	407.2	259.5	172.1	-	431.6
OPEC TOTAL	853.3	1596.3	760.1	3209.7	1039.6	2088.8	1044.3	4172.7
% of Total	26.3	49.8	23.9	100	24.6	50	25.4	100

Source: Johnson and Totto, 1982.

[a] "Other" category divided equally between light, middle, and heavy.

The present uncertainties about the absolute level of LDC demand outweigh the further uncertainties about the future product mix.

The problems of future oil demand and product demand mix would probably prove tractable if only more attention was given to the subject by economists. Oil demand in the LDCs is concentrated in a handful of nations; the six largest consumers account for almost 60 percent of LDC oil consumption, and the top fourteen consumers account for over 80 percent of LDC consumption.[11]

The 1970 and 1979 oil product demand patterns of the top six oil consumers among the LDCs are shown as Table 5.[12] There are substantial differences in demand patterns between these nations. There are, however, some broad trends that may be discerned in the 1970-79 period. With the exception of China, where the demand mix has remained almost constant despite rapid increases in total consumption, all of the nations have experienced falling market shares for light products such as gasoline and increasing market shares for the middle distillates. Moreover, most of the countries show falling shares for heavy fuel oil. It is also interesting to note that, despite the discussions of a "kerosene crisis" in the Third World, most of the growth in middle distillate demand results from increases in demand for diesel oils, not kerosene.[13]

In summary, most indications are that heavy fuel oils will lose market shares in most main consuming areas. Middle distillates appear to be gaining shares in all markets, while light products show a mixed trend, gaining shares in some areas while losing them in others. This, in general, indicates that worldwide there will be a need to produce less fuel oil and more lighter products from each barrel processed. Studies

TABLE 5
1970 and 1979 Demand for Major Products in the Six Largest Consumers Among Non-OPEC LDCS[a]

Country	Product Category[b]	Consumption mb/d		Market Share %		Growth Rate % p.a.
		1970	1979	1970	1979	1970-79
Argentina	Light	124.86	149.52	31	31	2.0
	Middle	129.31	178.72	32	37	3.7
	Heavy	148.60	148.60	37	31	0.0
	Total	402.77	476.84			1.9
Brazil	Light	208.67	304.48	44	32	4.3
	Middle	129.95	335.70	28	35	11.1
	Heavy	132.06	312.72	28	33	10.0
	Total	470.68	952.90			8.2
China	Light	69.98	251.27	16	15	15.3
	Middle	217.79	812.75	50	50	15.8
	Heavy	147.13	558.10	34	34	16.0
	Total	434.90	1622.12			15.8
India	Light	39.44	50.29	14	10	2.7
	Middle	17.11	307.83	59	64	6.7
	Heavy	79.45	125.21	27	26	5.2
	Total	290.00	483.33			5.8
Mexico	Light	213.50	355.29	47	39	5.8
	Middle	139.21	297.80	30	33	8.8
	Heavy	105.88	247.22	23	27	9.9
	Total	458.59	900.31			7.8
South Korea	Light	16.40	32.67	10	7	8.0
	Middle	46.83	141.35	29	31	13.1
	Heavy	97.82	275.44	61	61	12.2
	TOTAL	161.05	449.46			12.1

Source: United Nations Energy Yearbook, 1979. United Nations Statistical Office, New York, 1980.

[a] Excluding non-fuel uses, minor products, and refinery consumption. Percentages may not sum owing to rounding.

[b] Light: LPG, Gasolines; Middle: Kerosene, Jet Fuel, Diesel/Gas Oil; Heavy: Heavy Fuel Oils.

of world oil supplies, however, indicate that the average API gravity of crudes produced will be diminishing in the 1980s,[14] resulting in more fuel oil production during crude distillation. The fact that most nations are likely to be demanding increasing shares of the same categories of products indicates an increasing non-complementarity in the supply and demand picture for oil products worldwide. This, along with projected increases in the average sulfur and metals contents of crude oils available, will pose serious challenges for refiners.

*

The Refining Surplus

good

Refineries are capital-intensive operations with high fixed costs. As such, they require a large throughput of crude to remain profitable. The utilization factors necessary to produce profitability are a matter of conjecture, and undoubtedly vary from refinery to refinery. The goal, however, is to operate at about 93-94 percent of the theoretical (design, or "stream-day") capacity. This 93-94 percent level of operation, which allows for downtime and maintenance, is the "calendar-day" (cd) capacity of the refinery, and much confusion is caused by the fact that refinery capacity figures may be reported in either unit, often without clarification. Here, we shall use calendar-day figures throughout.

✓

Economies of scale manifest themselves in a seemingly counter-intuitive fashion in the refining industry. Since the costs per unit capacity decline with the size of the unit, in general only large refineries can afford to install upgrading capacity. Refinery complexity increases with refinery size. Although economies of scale are enjoyed on each processing unit, the greater number of types of units included in the refinery mean that capital costs per unit of crude throughput are generally higher for large refineries than for small.[15] These higher costs are offset by greater flexibility in types of crudes that may be processed, and by a higher-value output mix of products.

Refineries are often divided for convenience into three categories: "Topping" plants, that include little more than crude distillation towers; "Hydroskimming" plants, that include distillation facilities, desulphurizing equipment, and catalytic reformers for upgrading naphthas into gasoline; and "Cracking" plants that contain all of the above as well as units for "cracking" heavy fuel oils into light products and middle distillates. Topping plants and hydroskimming facilities are highly dependent on particular varieties of crude oils to produce the proper output mix, while cracking plants can generally handle a broad range of crude oils. While topping and hydroskimming plants form fairly homogeneous groups, the categorization of more sophisticated refineries as a single group belies the range of configurations and complexities found in sophisticated refineries. It is important to emphasize that refineries are highly individual operations; outside of China—where there are reportedly 1500 refineries ranging in size from 200 b/d upwards[16]—there are less than 1000 refineries in the world,[17] and each one has been custom-built at different times to meet different needs.

From the 1940s until recently, refinery capacity worldwide grew rapidly, but demand for refined products grew even faster. Table 6 gives an overview of refinery capacity and oil product consumption for the period 1940-1980.[18] The ratio shown of consumption to capacity is only a rough surrogate for capacity utilization, since processing volume changes, refinery fuel use, and changes in product stocks all may alter

TABLE 6
World Refining Capacity and Oil Product Consumption, 1940-1980

	1940	1960	1973	1980
Refining Capacity (1,000 b/cd)	6,868	24,470	60,214	81,918
Product Consumption (1,000 b/d)	5,494	21,812	56,591	61,585
Ratio of Consumption to Refining Capacity	.80	.87	.94	.75

Growth Rates:	1940-1960	1960-1973	1973-1980
Refining Capacity	6.5%	9.4%	4.5%
Product Consumption	7.0%	10.3%	1.2%

Sources: International Petroleum Encyclopedia and Downstream Project Data Files.

the numbers. Nonetheless, the trends are quite clear; until the 1973/74 oil crisis, refinery capacity was hardly growing rapidly enough to keep pace with the burgeoning demand for refined products.

The post-1940s period of rapid growth in refinery capacity was accompanied by changes in the location of the industry. Beginning around 1950, companies began to follow a strategy of locating refineries near centers of consumption rather than centers of oil production.[19] It is easy to attribute this change to the fact that crude oil transport is far cheaper than product transport, but this ignores the fact that the explosion in the size of crude carriers did not begin until the late 1950s.[20] We argue elsewhere that the shift in refinery location was a strategic decision taken by the oil companies for two primary reasons: First, because the Mexican nationalization in 1938, and the events in Iran in the early 1950s made companies increasingly wary of investment exposure in developing nations, and, second, because companies discovered that purchasing crudes on the export market enhanced refinery flexibility relative to refineries obtaining crude from a single oilfield.[21] Whatever the reasons, the years after 1950 saw a massive expansion of refineries based on imported crude oil.

Following 1973, the refining industry entered a fundamentally different environment. Import-based refineries found themselves unable to obtain reliable supplies of the crudes they were accustomed to processing. The situation was particularly damaging to topping plants that were reliant on certain suppliers of light, low-sulfur crudes to obtain the proper output mix. Historic price differentials paid for differences in crude qualities increased in a way that seldom reflected the value of the crude to the refiner.

In addition, the changes in demand growth after 1973 caught industry unawares. Refinery capacity continued to grow at 4.5 percent per year while demand slowed; over a quarter of present world refining capacity was added after 1973. Capacity utilization dropped from all-time highs to under 75 percent.

The continued expansion in the face of slowing demand is explained by a variety of factors. First, out of the 20 million b/cd of capacity added in 1973-80, about 8 million b/cd was under construction at the time of the embargo.[22] The continued controls on the price of oil in the United States, and the U.S. small refiner's entitlement program insulated the U.S. industry from the market situation.[23] The nations of Eastern Europe were likewise insulated from many of the market effects. But the most important feature was probably an inability to predict the extent to which demand would slow; and, indeed, without the 1979 round of price increases, the industry might have been correct.

While in the past it might have been appropriate to look at the oil industry on a company basis, the increasing politicization of oil, and the attendant regulation of exports, imports, and prices now make it perhaps more important to study the industry on a national basis. To take this sort of approach, we have found it convenient to divide a nations total refining capacity into categories based on the country's total refining capacity, its domestic demand for petroleum products, and its domestic crude oil production:

1) *Captive Refining*: This is capacity for which a nation has both the domestic oil production and the domestic market. This represents a protected market which is almost impossible to invade from the outside.

2) *Domestic Refining*: This is capacity that has a domestic marke but relies on imported crude. This represents a market where refiners

have an advantage in times when crude oil is readily available on world markets.

3) Export Refining: This is capacity backed by domestic production but without domestic markets. This type of capacity is at an advantage during times of tight oil availability; increasingly this type of capacity is represented by nationally-owned refineries in oil-exporting countries.

4) Balance Refining: This is capacity which is neither backed up by domestic production nor guaranteed access to a domestic market. If such capacity is to operate, it must operate as a regional or balancing, refinery, providing oil products to surrounding nations. Although some of this capacity is viable, most of the world's present excess capacity falls into this category: no oil and no markets.

Most nations have refining capacity in two or three categories. For example, Australia has oil production of about 353,000 b/d, refining capacity of about 743,100 b/cd, and consumption of about 614,000 b/d. Thus, Australia has 353,000 b/cd of captive refining, 260,800 b/cd of domestic refining, and 129,100 b/cd of balance refining. On the other hand, Trinidad has oil production of about 213,900 b/d, refining capacity of 456,000 b/cd, and domestic consumption of 58,000 b/d. Trinidad, therefore, has 58,000 b/cd of captive capacity, 155,900 b/cd of export capacity, and 242,100 b/cd of balance capacity.

Naturally the capacities included in each category shift as production and consumption levels change. The numbers are useful not because they are endowed with any great precision, but rather because they offer a general way of looking at the global refining situation at a point in time.

Table 7 gives a summary of the situation circa 1980. Since the analysis is from a national perspective, the regional numbers shown represent aggregations from country-by-country calculations from 162 nations.

As the table shows, as of 1980 outside the Soviet bloc only 19.5 mmb/cd out of 68.2 mmb/cd of refining capacity fell into the captive category; that is, only about 29 percent of the non-Soviet world's capacity was in a secure position of access to both domestic oil and domestic markets. The rest of the world faced problems either in locating markets for products or in obtaining supplies of crude oil--or both.

At the opposite end of the spectrum from the captive capacities in terms of stability lies the world's balance refining. "Balance" is a polite term for most of this capacity; in the present context, "excess" is a more accurate term. In 1980 about 14.5 mmb/cd of capacity fell into this category. Almost half of this excess is in Western Europe, and about a third of Western Europe's total capacity is in this class. This situation has worsened each year following the price increase attendant upon the Iranian revolution. As the demand for oil products has begun to shrink in the OECD nations, increasing shares of capacity have migrated from the domestic to the balance category. Refiners who previously were concerned only with the availability and price of oil have suddenly awakened to find their privileged markets disappearing as well.

There was a time when balance refining--importing oil and refining for reexport--had an important role to play in the world market. And some nations, such as Bahrain with privileged access to Saudi crude, or Singapore, with special relationships as a products supplier for the

TABLE 7
Categorization of Refining Capacity by Region, 1979/80

Region/Country	Oil Production mb/d	Product Consumption mb/d	Captive Refining mb/cd	Domestic Refining mb/cd	Export Refining mb/cd	Balance Refining mb/cd	Total Refining mb/cd	Estimated Utilization % of cal day	
								1979	1980
Africa	6119.7	1306.3	705.6	556.9	586.6	329.9	2161.0	72	-
North America	10064.4	18252.2	10064.2	8180.6	-	2386.4	20361.4	81	76
United States	8650.0	16390.0	8650.0	7740.0	-	2075.4	18465.4	81	75
Oceania	359.5	741.1	359.5	343.2	-	158.3	861.0	83	-
Latin America	5429.3	4401.9	2296.1	2003.4	1776.2	2590.1	8673.8	70	77
Brazil	183.0	1175.0	183.0	992.0	-	226.6	1401.6	88	-
Mexico	1828.7	904.0	904.0	-	489.5	-	1393.5	84	-
Venezuela	2128.4	279.0	279.0	-	1069.8	-	1348.8	62	-
Middle East	19787.8	2028.7	1475.4	497.0	1551.2	540.1	4063.7	67	-
Kuwait	1879.0	154.0	154.0	-	451.0	-	605.0	63	-
Saudi Arabia	9779.0	415.0	415.0	-	275.0	-	691.0	76	-
Centrally Planned Asia	2130.0	1918.7	1810.0	33.7	-	6.4	1850.1	100	-
Centrally Planned Europe	12164.7	11004.0	9166.4	1761.9	2580.0	215.8	13724.1	80	-
Far East	2327.7	8207.5	744.1	7176.6	196.3	1646.5	9763.5	80	65
Indonesia	1572.3	367.0	367.0	-	148.0	-	515.0	87	-
Japan	7.5	5010.0	7.5	5002.5	-	652.0	5662.0	82	71
Singapore	-	380.0	-	380.0	-	668.8	1068.8	63	-
Western Europe	2527.9	13644.3	2064.1	11232.1	87.7	6805.8	20189.7	66	61
Belgium	-	545.0	-	545.0	-	510.9	1055.9	61	60
France	25.2	2295.0	25.2	2269.8	-	1046.5	3341.5	74	68
Germany	93.2	2735.0	93.2	2641.0	-	286.2	3021.2	69	66
Netherlands	24.0	815.0	24.0	791.0	-	1012.0	1827.0	71	56
United Kingdom	1575.7	1675.0	1575.7	99.3	-	954.6	2629.5	73	66
World	60904.0	61584.7	28685.6	31785.4	6760.0	14687.3	81910.3	75	73
World Excluding Centrally Planned Europe	48739.3	50580.7	19519.2	30023.2	4180.0	14471.5	68194.2	74	71

Sources: United Nations Energy yearbook, 1979, United Nations Statistical Offices, New York, 1980; Oil and Energy Trends Statistical Review 1981, Energy Economics Research Ltd., Reading, 1981; BP Statistical Review of the World Oil Industry, 1980, British Petroleum Ltd. London, 1981; International Energy Statistical Review, 1980-81 Issues; "Worldwide Issue," Oil and Gas Journal, December 27, 1980; Downstream Project Data System.

ASEAN nations, may be able to continue to their entrepot roles. Some European refiners have managed to limp along by processing crude on contract for reexport to oil-exporting governments. An examination of the current overcapacity in refining shows that the surplus is indeed worldwide, and the number of countries where demand is pressing against a capacity constraint is limited to a few small Third World consumers. There is thus a very minor market for entrepot refineries at present.

In addition, if there were to be a revival or growth in demand in countries that have insufficient capacity, it is difficult to see what advantage most of the present Balance refineries would have in capturing these markets. In effect, these refineries would be competing in third markets with the Export refineries presently being built in oil-exporting countries. As discussed below, the growth in refining in oil-exporting nations will be far more than enough to fill any new demands that may materialize. Export refineries will be backed up by guaranteed supplies of crude oil of known quality, as well as the political support of their governments. While many oil-importing governments may be willing to fight to keep their refining industries going to meet domestic demands, it is hard to envision the political pressures that would allow an oil-importing government to fight to keep refineries alive for re-export trades—except of course, in a few traditionally entrepot states such as Singapore. The great debate in most capacity-surplus countries, therefore, is not about the need to scrap capacity, but rather which capacity to scrap. Surplus capacity, however, as an Italian chemical executive has observed, is always composed of, "the plants of one's competitors, never those of one's own company."[24]

The true competition in the market at present is between Domestic and Export refining. In 1980, the total surplus in refining capacity in the non-Soviet world was about 17.7 mmb/cd. After accounting for the excess capacity in Balance refining, this still leaves a substantial surplus. The consequent low operating capacities are quite equitably distributed; Export refineries have run at rates well below technical capacity, but have provided enough product exports to substantially depress operating rates of Domestic capacity in the importing countries.

Part of the low operating rates of Export refineries can be explained by technical factors. Much of the present refining capacity in the exporting nations is composed of old, unsophisticated units in a hydro-skimming configuration. Much of the equipment is in need of revamping or replacement, and several oil-exporting nations have begun devoting attention to this problem. The lack of sophistication has been an even more serious problem; without upgrading facilities, many of the existing refineries in oil-exporting countries have been in a position of producing more fuel oil than is wanted at present world oil prices.

On the other hand, domestic refineries have also been suffering. Referring back to Table 7, it can be seen that in many areas capacity utilization is well below the levels that would have been predicted from product consumption. For example, if all German products in 1979 had been provided from German refineries, capacity utilization would have been in excess of 90 percent; in fact, it was about 69 percent. This, and other examples, show that product import penetration into the domestic refining market is already substantial. As a result, losses have become the norm in refining operations in many areas. Western Europe has been particularly damaged; the average loss on refining in

Europe in May 1981 was $4.60 per barrel processed.[25] Worldwide, refining losses in 1981 were on the order of $10 billion.[26] The cumulative losses of 1974-75 compounded with those of 1979-1981 add up to a massive financial burden with no signs of relief until a significant fraction of capacity is scrapped. In the present situation, scrapping 15-20 million b/cd of capacity would bring the market into a roughly balanced position. However, this scenario takes no account of further construction, and further construction is proceeding at a rapid pace.

Expansions in OPEC and the Gulf

In face of the dismal operating rates for refineries worldwide, and the limited prospects for demand growth in the coming decade, it might seem surprising that anyone is contemplating building refineries. In fact, however, our data file indicates that there were plans for about 10 million b/cd of capacity additions on the books at year-end 1981.[27]

Not all of this capacity is likely to be built. Only 3.7 million b/cd is presently under construction. At least 2.65 million b/cd of capacity not under construction is likely to be shelved in nations with a current refining surplus. The remaining 7.6 million b/cd is likely to come onstream in this decade. Of this, OPEC nations will account for about 3.1 million b/cd, and other major oil-exporting nations will account for about 1.4 million b/cd; thus, about 60 percent of the expansion will occur in oil-exporting developing countries.[28]

The political and economic considerations that encourage OPEC nations to push into refining and other downstream activities have been outlined elsewhere.[29, 30] The important questions are not whether such expansions ought to occur, but rather whether they will occur, and what the resulting impacts on the market may be. As to whether such expansions will occur, we believe the answer is yes. About half of OPEC's planned capacity expansions are already under construction, and most of the rest have passed through the feasibility and design engineering stages.[31] As to what the effects may be, that is the subject of the remainder of this paper.

Table 8 shows the current refining capacity in OPEC and the Gulf nations, and the expected capacities for 1986.

Iran's refining industry was the largest in the Gulf; it was also the most sophisticated. The emphasis in Iran was always on meeting domestic demands. Because of the size of the Iranian economy and its rapid pre-revolution growth in demand for middle distillates and gasoline, most of the Iranian refineries were equipped with extensive cracking facilities.[32] The future is clouded by lack of information about Abadan following the assaults by Iraqi shellings. Following an earlier paper, where we asserted that the Abadan refinery had been "totally destroyed,"[33] we were informed by various government and industry sources that most of the damage had occurred in the storage tanks. Out of a lack of hard facts on either the fate of Abadan or future Iranian construction plans, we have assumed no net change in Iran's capacity by 1986. Indeed, we have assumed that if Abadan is destroyed, equal capacity will have to be constructed to meet demand in 1986.

Iraq's refining industry is relatively unsophisticated, and Iraq has not articulated anything that could be characterized as a refining policy. The Basrah refinery was expanded and upgraded just before the

TABLE 8
Current and Projected Refining Capacity in OPEC and the Gulf for 1986 (Thousand b/cd)

	1981 (+)	Under Construction (+)	Additional[a] Planned	(=) 1986
Iran[b]	1,235	---	---	1,235
Iraq[b]	249	140	---	389
Kuwait	554	58	154	766
Qatar	14	47	---	62
Saudi Arabia	717	734	466	1917
UAE	126	56	172	354
OPEC Gulf	2,895	1,035	792	4,722
Algeria	442	---	344	786
Ecuador	87	---	108	195
Gabon	20	---	---	20
Indonesia	486	186	265	937
Libya	142	220	---	362
Nigeria	260	---	---	260
Venezuela	1,349	---	150	1,499
Other OPEC	2,786	406	867	4,059
Total OPEC	5,681	1,441	1,650	8,781
Bahrain	250	---	---	250
Oman	43	---	---	43
Other Gulf	293	---	---	293
Total OPEC & Gulf	5,974	1,441	1,659	9,074

Source: Downstream Project Data System.

[a] As discussed in text, there are plans for refining additions beyond those in this table; some are spurious, some speculative, and others are fairly clearly planned, but for the post-86 period.

[b] The situation in Iran and Iraq is confused. The extent of the war damage is not clear. Moreover, both countries had completed new capacity on the eve of the war, and both had plans to scrap some outmoded capacity. These capacity estimates should be treated with circumspection.

war, and another 140,000 b/cd plant was under construction at Baiji.[34] There have been references to a possible expansion of the Basrah refinery by 300,000 b/cd, but we have not included this in our projections.

Kuwait and Saudi Arabia have both taken an aggressive position with respect to export refining. The countries have taken very different approaches with respect to establishing a market position, however.

The Kuwait Petroleum Company is pursuing a strategy that, in effect, will push it into the role of a major multinational oil company. Domestically, the company is both expanding and upgrading refining facilities; projected additions of cracking and desulfurizing units will give Kuwait one of the most sophisticated refining industries in the world. KPC is also moving into tankers, petrochemicals, and marketing,[35] and is actively engaged in purchasing hydrocarbon processing interests overseas.[36]

The Saudi strategy, on the other hand, has been to forge an allianc with the major oil companies. Current Saudi capacity is substantial at over 700,000 b/cd, but the bulk of this capacity is rather unsophisticated; the Riyadh refinery has been upgraded and expanded, but the refineries at Jeddah, Ras Tanura and in the Neutral Zone are essentially little more than hydroskimming plants.[37]

Among the new plants planned to be onstream by 1986, there are joi venture plants: The Petromin-Petrola 300,000 b/cd plant at Rabigh, the Petromin-Mobil 250,000 b/cd plant at Yanbu, and the Petromin-Shell 230,000 b/cd plant at Jubail. All are sophisticated, export oriented operations. In addition, there are plans for a 160,000 b/cd Petromin refinery at Yanbu, and a 230,000 b/cd Petromin refinery at Juaymah. Th Petromin facility at Yanbu will be a hydroskimming operation, but the refinery at Juaymah will be an advanced cracking facility designed to handle heavy, high-sulfur crudes from the Manifa field.[38] In addition, there are discussions of an additinal 750,000 b/cd of capacity to be added after 1986.[39]

The Saudis have gone to great lengths to insure participation of the oil companies in the joint ventures. As well as guaranteeing access to "incentive crude" in proportion to the foreign partner's direct equity investment,[40] the Saudi financing schemes (discussed below) allow the foreign partner to take a 50 percent stake in the venture while providing only 15 percent of the capital. Under the circumstances, it is difficult to believe that the Saudis encouraged foreign participation because they needed the capital; the joint ventures look like a way of purchasing market access.

One Gulf nation has already encountered a serious problem in product marketing. The new refinery at Ruwais in Abu Dhabi, which came onstream in early 1981, has found difficulty in disposing of its fuel oil output.[41] Although hydrocracking capacity was planned for later addition, at present Ruwais is in an unprofitable hydroskimming configuration.

The UAE's refining capacity at present consists of a small (13,800 b/cd) refinery at Umm Al-Nar, and the 110,000 b/cd facility at Ruwais. Expansions presently underway at Umm Al-Nar will increase capacity there to about 70,000 b/cd in the near future. Beyond this, there are plans for Ruwais Phase II, which will increase the capacity of Ruwais to about 285,000 b/cd. The discouraging results of UAE's first major venture into products has brought about a postponement of Phase II, and a speeding of work on one of the hydrocracking units.[42] Nonetheless, the most recent indications are that Phase II will ultimately go ahead; UAE has ambitions of refining 50 percent of output.[43] This should give UAE a total capacity of about 350,000 b/cd by 1986.

Bahrain's single refinery is not likely to expand in the future. Its 250,000 b/cd capacity is far in excess of Bahrain's 50,000 b/d oil production. Bahrain has extremely close ties with both Saudi Arabia and Kuwait, however, and reliable supplies of Saudi crude are not a problem. The Bahrain refinery is already relatively sophisticated, with catalytic cracking, visbreaking and desulfurization units in operation; the plans for a 60,000 b/d hydrocracker joint venture with Saudi Arabia and Kuwait[44] will make it into a highly adaptable facility.

Qatar's present capacity of about 14,000 b/cd is being supplemented by a new refinery of about 47,000 b/cd.[45] Both these refineries are very simple hydroskimming plants; the Qatari crude is of high enough quality that cracking facilities are hardly needed.

Oman's first refinery, of about 47,000 b/cd capacity, should come onstream in 1983.[46] Designed to meet domestic needs, there should be some small amount left for export for several years.

The only remaining capacities in the Gulf which have not been discussed are the two refineries in the Saudi-Kuwaiti Neutral Zone. Their combined capacity is about 80,000 b/cd. Feedstocks are the heavy Neutral Zone crudes, and both plants primarily produce fuel oil.[47]

Algeria recently inaugurated a major export refinery at Skikda, raising Algerian capacity to about 440,000 b/cd. There are plans for an additional 340,000 b/cd divided between Bejaia and another undisclosed location.[48] This would allow Algeria to refine about 75 percent of its crude production, or even more if production levels decline. Algeria, however, is a likely candidate for delaying expansion if market prospects appear bleak; Algeria is on a tighter budget than many of its Arab colleagues in OPEC.

Libya's present capacity is about 140,000 b/cd, and the new refinery at Ras Lanuf will raise the total to about 360,000 b/cd. Although Libya is a candidate for further capacity expansions, there are no plans at present. Upgrading capacity is being expanded in the form of coking units at Ras Lanuf and Azzawaiya.[49]

Nigeria and Gabon both have relatively undeveloped refining sectors. Gabon's capacity is only 20,000 b/cd, and there are no immediate plans for expansion. Nigeria's capacity was recently expanded to 260,000 b/cd; there were plans for an additional 100,000 b/cd, but budgetary problems may have delayed the project indefinitely.[50] Nigeria will likely have to add capacity to meet domestic demands before 1990.

Ecuador's present capacity is almost 90,000 b/cd, and plans are underway to raise this to about 190,000 b/cd.[51] The majority of this expansion will probably be devoted to domestic needs, and, given the level of crude production in Ecuador, further expansion is quite unlikely.

Venezuela's refining industry is the largest within OPEC. Present capacity is about 1.35 million b/cd, excluding a few small plants not presently in operation. Venezuela's industry is rather old and unsophisticated, producing a large amount of fuel oil. For many years, the United States offered a large market for Venezuelan fuel oils, but as prices have risen and the United States has begun programs to reduce oil consumption, the market has begun to shrink. Venezuela has therefore initiated a major program of revamping existing facilities, and installing cracking units. Revamping and minor expansions will probably raise effective capacity by about 150,000 b/cd by 1985, but the increased cracking capacities will have a more important effect on Venezuela's market position than the relatively small expansion in distillation capacity.

Indonesia has begun a major expansion in refining aimed at achieving domestic self-sufficiency in oil products. Indonesia is a case study in the problems of matching output patterns with the demand mix. Although present Indonesian refining capacity exceeds product demand, the huge demands for middle distillates in Indonesia cannot be met with existing facilities. This has resulted in offshore processing arrangements with Singapore which have been relatively satisfactory; but Indonesia has decided to expand domestic capacity. About 185,000 b/cd is presently under construction at the existing Cilicap refinery, and 255,000 b/cd is being engineered for other sites.[52] An additional refinery of 250,000 b/cd for West Java is under discussion for the second half of the decade. All of this new capacity will be equipped with sophisticated cracking capacity. The expansion should more than meet Indonesian needs; there should be an exportable surplus of some products (probably fuel oil).

If expansions in OPEC and Gulf nations proceed as scheduled, if Egypt and Mexico complete their expansions, and if OECD plants under construction are completed, world capacity will expand by about 6 million b/cd; if other developing countries complete their plans, expansions could total 7.4 million b/cd.[53] If total world demand for oil products remains static, this would imply a drop in the world average capacity utilization rates to about 68-69 percnet. This could lead to refining losses even greater than those seen in recent years. Massive refinery closures seem likely in the wake of such losses. Before we examine the likely candidates for the scrapyard, however, a closer examination of the capabilities and economics of OPEC and Gulf refineries is in order.

Future OPEC Product Exports and Gulf Refinery Flexibility

Given production levels and oil product demand in OPEC countries, it is possible to assess likely levels of product exports from OPEC nations around 1986. This exercise is performed in Table 9. The capacity utilization assumed is high (85 percent of design capacity, or 91 percent of calendar day capacity), but not unreasonably so, and is well below the physical capabilities of the refineries.[54]

The problem of assessing the possible product mixes from the refineries is more complex. The output mix is affected by the kinds of crude processed, the size and types of processing units, and the operating strategy employed. The finer points of product blending specifications can produce constraints that are apparent only to the quality control engineer. An accurate assessment of refinery capabilities would require a very large simulation model for each refinery.

For our purposes here, a simpler approach is needed. To determine the possible output mixes, we have employed PRYMO, a Petroleum Refinery Yields Model under development at the East-West Center.[55] PRYMO is not a linear programming model, but rather a physical simulation model based on the correlation chart type of analysis introduced by Gary and Handwerk.[56]

TABLE 9
Projected Product and Crude Exports from OPEC in 1986
(Thousand b/d; rounded to nearest 10,000 b/d)

Country	(1) Crude[a] Production	(2) Refinery[b] Runs	(3) Product[c] Consumption	(4) Crude Exports (1-2)	(5) Product Exports	(6) Total Exports (4+5)
Algeria	900	710	120	190	590	780
Ecuador	200	180	110	20	70	90
Gabon	200	20	40	180	(20)	160
Indonesia	1,640	850	510	790	340	1,130
Iran	3,170	1,120	610	2,500	510	2,560
Iraq	3,090	350	390	2,740	(55)	2,685
Kuwait	1,500	700	70	800	630	1,430
Libya	1,500	330	130	1,170	200	1,370
Nigeria	2,060	240	210	1,820	30	1,850
Qatar	500	60	10	440	50	490
Saudi Arabia	6,960	1,740	640	5,220	1100	6,320
UAE	1,800	320	120	1,400	200	1,600
Venezuela	1,840	1,360	410	480	950	1,430
Neutral Zone	500	30	0	470	30	500
OPEC	25,860	8,010	3,370	17,850	4,625	22,475

[a] By implicit growth rates from 1985 and 1990 projections in Fesharaki, F. and D. T. Isaak, OPEC, The Gulf, and the World Petroleum Market, Westview Press, Boulder, 1982. (forthcoming).

[b] Taken as 91 percent of calendar day (85 percent of stream day) capacities in Table 8.

[c] By implicit 1985-1990 growth rates from projections in Table 4.

Unlike a linear programming model, PRYMO models what a refinery can do, not what it ought to do.

PRYMO can be run in four modes: Operator control, light product maximizing, middle distillate maximizing, and heavy fuels maximizing. In the last three modes, the model uses crude oil characteristics curves and the refinery configuration to try to maximize the product group in question. At present, the model can simulate atmospheric distillation, vacuum distillation, catalytic cracking, visbreaking, coking, distillate hydrocracking, and residuum hydrocracking, though with varying degrees of accuracy. In addition, it can correct for refinery energy use.

To clarify questions regarding future output capabilities, we have applied the model to all Gulf refineries, present and planned, in the configurations planned for 1986. We hope to expand the scope to cover other areas in future work.

Each of the refineries was simulated in light, middle, and heavy fuel maximizing modes, running the appropriate crude oil. More details on assumptions are given elsewhere.[57] Crude runs were taken at 91 percent of calendar day capacity. The refineries simulated, and their assumed throughputs, are shown in Table 10. The results of the simulations, aggregated by country, are shown in Table 11.

The product mixes shown in each mode represent an extreme; in practice, most refineries will probably not be operated in one of these modes, but rather somewhere in between. The actual operating strategy will be set by domestic product requirements and product prices on the export market.

What the model shows is that the Gulf, taken as a whole, will have a fairly flexible refining system by the late 1980s, capable of substantial

TABLE 10
Projected Operations of Gulf Refineries in 1986

Country	Name/Location	Estimated Capacity b/cd	Estimated Crude Runs, b/d
Iran	Abadan	563,000	515,000
	Esfahan	219,000	200,000
	Kermanshah	19,500	18,000
	Masjid-e-Sulaiman	73,000	66,000
	Tabriz	87,000	80,000
	Tehran	229,700	209,000
	Shiraz	44,000	40,000
Iraq	Baiji	39,500	127,500
	Basrah	141,700	129,500
	Daura	78,000	71,000
	Haditha	7,600	7,000
	Kirkuk	2,200	2,000
	Khanaquin	13,000	12,000
	Mufthia	4,900	4,500
	Qaiyarah	2,200	2,200
Kuwait	Mina Abdulla	311,400	283,000
	Mina Al-Ahmadi	250,000	227,000
	Shuaiba	205,000	187,000
Qatar	Umm Said I	13,700	12,500
	Umm Said II	46,500	42,500
Saudi Arabia	Jeddah	98,000	90,000
	Juaymah	233,000	213,000
	Jubail	233,000	213,000
	Rabigh	302,000	276,000
	Ras Al Khafji/Mina Saud	80,000	32,000
	Ras Tanura	507,000	462,000
	Riyadh	112,000	103,000
	Yanbu (Petromin-Mobil)	274,000	250,000
	Yanbu (Petromin)	158,000	144,500
UAE	Umm Al Nar	70,000	63,800
	Ruwais I & II	284,000	259,000
Bahrain	Awali (BAPCO)	274,000	250,000
Oman	Muscat	46,500	42,500

TABLE 11
Projected Flexibility of Gulf Refineries in 1986
(Barrels per day)

	Heavy Mode		Middle Mode		Light Mode	
	Volume	%	Volume	%	Volume	%
Iran						
Light	246,163	22.3	232,235	21.0	432,271	38.6
Middle	247,033	22.3	494,458	44.8	232,366	20.8
Heavy	613,170	55.4	377,950	34.2	455,012	40.6
Total	1,106,366	100.0	1,104,644	100.0	1,119,649	100.0
Iraq						
Light	86,816	25.6	78,366	23.1	157,290	45.6
Middle	82,074	24.2	161,371	47.6	72,659	21.1
Heavy	170,248	50.2	99,482	29.3	114,755	33.3
Total	339,138	100.0	339,219	100.0	344,715	100.0
Kuwait[a]						
Light	111,724	16.5	105,683	15.4	221,349	31.9
Middle	124,103	18.3	271,978	39.8	122,737	17.7
Heavy	442,768	65.2	306,871	44.8	350,110	50.4
Total	678,595	100.0	684,482	100.0	694,196	100.0
Qatar						
Light	14,983	29.5	12,895	25.3	19,740	39.0
Middle	14,156	27.8	23,188	45.5	12,364	24.4
Heavy	21,677	42.7	14,882	29.2	18,543	36.6
Total	50,816	100.0	50,965	100.0	50,647	100.0
Saudi Arabia						
Light	352,639	21.1	460,559	26.8	637,660	37.0
Middle	383,379	22.9	662,013	38.4	360,372	21.0
Heavy	935,739	56.0	598,457	34.8	721,436	42.0
Total	1,671,757	100.0	1,721,029	100.0	1,719,468	100.0
U.A.E.						
Light	85,135	27.4	84,059	27.1	180,589	56.5
Middle	83,934	27.0	184,677	59.7	74,497	23.3
Heavy	141,380	45.6	40,694	13.2	64,473	20.2
Total	310,449	100.0	309,430	100.0	319,559	100.0

Table 11 (cont'd)

	Heavy Mode		Middle Mode		Light Mode	
	Volume	%	Volume	%	Volume	%
Bahrain						
Light	50,363	21.3	79,286	32.5	172,321	67.9
Middle	54,753	23.1	151,355	62.1	52,283	20.6
Heavy	131,562	55.6	13,272	5.4	29,219	11.5
Total	236,678	100.0	243,913	100.0	253,823	100.0
Oman						
Light	7,896	20.3	6,673	17.2	10,848	28.0
Middle	9,464	24.3	16,107	41.6	8,720	22.5
Heavy	21,593	55.4	15,976	41.2	19,184	49.5
Total	38,953	100.0	38,757	100.0	38,751	100.0
Total Gulf						
Light	955,719	21.6	1,059,706	23.6	1,832,068	40.3
Middle	998,893	22.5	1,965,147	43.7	935,998	20.6
Heavy	2,478,137	55.9	1,467,584	32.7	1,772,743	39.1
Total	4,432,749	100.0	4,492,437	100.0	4,540,809	100.0

[a] Without addition of cracking facilities at Mina-Al-Ahmadi and Mina Abdulla.

[b] Since configurations of the new refineries at Jubail and Juaymah are unknown, the capabilities of these two plants have been assessed as if they were equivalent to the Petromin-Mobil refinery at Yanbu.

NB: Does not include output of NGL facilities.

adjustments to meet changing demand patterns. The amount of flexibility varies considerably between countries, however, both as a result of differences in the sophistication of the refineries and as a result of differences in the characteristics of crude oils. Additional cracking facilities planned for Kuwait may enhance the Gulf's flexibility even further.[58] This level of flexibility in the Gulf refining system allays to some degree earlier fears that the Gulf refineries might be dumping large volumes of fuel oil on the market in the late 1980s.[59]

Using our simulation model and other information available to us we have estimated the mix of product exports from the Gulf in Table 12. The table shows two scenarios of product exports in 1986. Both scenarios assume that the refineries of Iran, Iraq and the UAE will run in the middle distillate mode to attempt to meet domestic demand. Other refineries are assumed to run in light products mode in Scenario I and middle distillate mode in Scenario II.

The refinery flexibilities shown in Table 12 are self-explanatory. It indicates that the Gulf refineries are likely to have a range of 0.7 to 1.1 mmb/d of light product exports; 0.4 to 1.0 mmb/d of middle distillate exports and between 0.9 to 1.0 mmb/d of heavy product exports by 1986. The real significance of the exercise is to show that the Gulf exporters are able to watch the demand developments and marketing prospects in order to devise their refining production strategies. (Note: product export data in Table 9 may not exactly match data in Table 12. The difference is that one considers refining runs and the other refining output).

TABLE 12
Scenarios of Petroleum Product Exports from the Gulf, 1986
(000's Barrels Per Day)

Type of Product		Scenario I[a]			Scenario II[b]		
		Light	Middle	Heavy	Light	Middle	Heavy
Iran	Production	232.2	494.5	378.0	232.2	494.5	378.0
	Consumption	98.4	372.6	135.5	98.4	372.6	135.5
	Exports(Imports)	133.8	121.9	242.5	133.8	121.9	242.5
Iraq	Production	78.4	161.4	99.5	78.4	161.4	99.5
	Consumption	68.8	197.0	128.7	68.8	197.0	128.7
	Exports(Imports)	9.6	(35.6)	(29.1)	9.6	(35.6)	(29.1)
Kuwait	Production	221.3	122.7	350.1	105.7	272.0	306.9
	Consumption	36.1	30.1	5.6	36.1	30.1	5.6
	Exports(Imports)	185.2	92.6	344.5	69.6	241.9	301.3
Qatar	Production	19.7	12.4	18.5	12.9	23.2	14.9
	Consumption	4.3	5.5	-	4.3	5.5	-
	Exports(Imports)	15.4	6.9	18.5	8.6	17.7	14.9
Saudi Arabia	Production	637.7	360.4	721.4	460.6	662.0	598.5
	Consumption	109.0	227.7	301.8	109.0	227.7	301.8
	Exports(Imports)	528.7	132.7	419.6	351.6	434.3	296.7
UAE	Production	84.1	184.7	40.7	84.1	184.7	40.7
	Consumption	20.2	97.6	4.5	20.2	97.6	4.5
	Exports(Imports)	63.9	87.1	36.2	63.9	87.1	36.2
OPEC Gulf Exports		936.6	405.5	1032.2	637.1	867.3	862.5

(cont'd)

Table 12 (cont'd)

Type of Product		Scenario I[a]			Scenario II[b]		
		Light	Middle	Heavy	Light	Middle	Heavy
Bahrain[c]	Production	172.3	52.3	29.2	79.3	151.4	13.3
	Consumption	3.2	3.1	0.7	3.2	3.1	0.7
	Exports(Imports)	169.1	49.2	28.5	76.1	148.3	12.6
Oman[c]	Production	10.8	8.7	19.2	6.6	16.1	16.0
	Consumption	6.4	8.3	0.1	6.4	8.3	0.1
	Exports(Imports)	4.4	0.4	19.1	.2	7.8	15.9
Gulf--Total Exports		1110.1	455.2	1079.8	713.4	1023.4	891.0

Source: OPEC Downstream Project.

[a] Iran, Iraq, and UAE in Middle distillate maximizing mode; others maximizing light products.

[b] All refineries in middle distillate mode

[c] No demand forecasts were given for Bahrain or Oman. We have therefore estimated their consumption by growing aggregate 1979 consumption at 5 percent per annum, and assuming a constant demand mix. For Bahrain, the mix is determined from OAPEC Statistical Bulletin, 1979, OAPEC, Kuwait, 1980; for Oman, from United Nations Energy Yearbook 1979, United Nations Statistical Office, New York, 1980.

Economics of Gulf Export Refining

We are often asked by oil analysts why the Gulf nations are moving into export refining when it is "clearly uneconomic." Our answer is that such an assertion is far from clear. National oil companies and private oil companies have different goals and different investment options. Furthermore, many Gulf export refineries will also be serving domestic markets to varying degrees; when a government both pays for refinery construction and then subsidizes domestic product consumption by holding prices below world levels, common business criterion of what is economic hardly applies. A "return on investment" type of approach may be appropriate when comparing two investments available to a single investor, or even when comparing similar investments to similar investors, but it is questionable practice when comparing governments and firms.

There is little question that the Gulf governments will subsidize the construction of their refining industry; the United States and some European governments have provided various subsidies to refiners at various points.[60, 61] What we hope to assess here is whether the prevailing subsidies are sufficient to make Gulf refineries competitive on the world market. To achieve this, we shall attempt to derive the processing and transport costs per ton for a new Gulf refinery, an existing OECD refinery, and new OECD refinery. This type of approach is more popular with engineers and accountants than with economists. To satisfy the latter, we shall also show a brief, present value calculation.

Our hypothetical refinery will be a moderately sophisticated cracking facility of 250,000 b/d design capacity. For energy costs and financing schemes, we will use the standard methods the Saudis are applying. The period for analysis is 15 years. Costs per ton of oil product output will be divided into four categories:

1) Transport costs
2) Energy costs
3) Other operating costs
4) Capital costs

Transport costs: The goal here is to estimate the transport cost element for a ton of oil products delivered CIF Rotterdam. In the case of the OECD refinery, this represents the cost of moving a ton of crude oil from the Gulf to Rotterdam (actually slightly more than a ton, since some of the oil will be consumed as refinery fuel). In the case of the Gulf refinery, this represents the cost of shipping the oil products.

We shall employ the January 1981 worldscale rate as a standard, since the July 1981 rate reflects a temporary surge in bunker prices. Rates for 250,000 dwt ships were hovering around 20-30 worldscale in that period;[62] with a gradual improvement in the tanker market, rates should return to about WS 40-45. At WS 42.5 crude oil delivery to Rotterdam will cost about $9.30/ton.

For product delivery, we assume that the Gulf nations will move toward larger ships, in the range of 50-120,000 dwt, as Kuwait is already starting to do.[63] Rates for many of these ships have also been depressed. We assume that they will rise to WS 60, implying a product transport cost of about $13/ton. With smaller ships, this figure would be much higher.

Energy costs: We assume a standard energy use of 2.5 million BTUs per ton of crude input. This is low relative to available estimates,[64, 65] but reflects the trend toward increased energy efficiency in refining. We assume that the average cost of energy to the OECD refinery is $4.50/million BTUs (1981 dollars). For the Gulf refinery, we assume gas will be available at 50¢ per million BTUs as in the present Saudi policy.[66] If the refinery runs at 85 percent of design capacity, and loses 2.5 percent of crude input mass in processing, the output is about 10.36 million tons of oil products per year. At the rates quoted above, energy costs should be $11.54/ton in the OECD, and $1.25/ton in the Gulf.

Other Operating costs: This includes payroll, administration, and miscellaneous. We see no reason to assume substantial differences between the Gulf and the OECD in this regard, and will use the 1979 US average of $9.22/ton (1981 dollars).[67]

Capital costs: This is the most difficult aspect of the problem to assess. On average, it appears that industrial projects cost 30-50 percent more in the Gulf than in the OECD;[68] we shall assume a 40 percent differential. We shall use the refinery planned at Jubail as an example, estimating its cost at $1.4 billion;[69] this implies a cost of $1 billion in the OECD.

Capital charges are not, in fact, spread evenly over the products produced across time; but to conduct this analysis, we must select a means of doing exactly this. The accounting method, costing the capital investment across each unit, does not reflect the time value of money nor the financing method. We have attempted to solve this problem by treating the capital costs as annuities or levelized loans, at the relevant interest rates. This method is not perfect, but seems to involve less distortions than other ways of levelizing the capital charge per ton.

Saudi joint ventures are financed 60 percent by a loan from the Public Investment Fund (PIF), 15 percent by the Saudi partner's equity, 15 percent by the foreign partner's equity, and 10 percent by commercial borrowing.[70] PIF funds are available at rates of 3-6 percent nominal interest; we shall assume 5 percent, corresponding, at 10 percent inflation, to a -5 percent real interest rate. We assume commercial funds are available at 2 percent real interest. We assume loans can be rolled over across the 15-year period of analysis.

We shall examine the costs under three cases:

1) 15 percent annuity for foreign partner, 10 percent annuity on Gulf equity;
2) 15 percent annuity for foreign partner, government recovery of nominal equity;
3) "Sunk costs" production; only debt obligations met.

In the case of the new OECD refinery, company equity was taken at 15 percent, and 85 percent of the plant was assumed to be financed at 2 percent real interest. Raising the company's equity share worsens its position in Case 1, but improves its survivability in Case 3.

The three cases are shown in Table 13. In capital charge terms, the Gulf refinery performs poorly in Case 1, is competitive in Case 2, and has an advantage in Case 3. Clearly no one would enter a project with the intent of losing all their equity, but once a project is completed, the sunk costs capital charge becomes the minimum charge rate.

Of course, a Gulf refinery will not be competing against a new OECD plant, but rather against existing OECD plants. The apparent average capital charge per ton of prodcts in the United States is about $2.12/ton;[71] we shall use this as the OECD average.

The results are shown in Table 14. The table indicates that new refineries in the Gulf have an advantage over new refineries in the OECD in Case 1, and are competitive with existing OECD refineries in Case 2. In Case 3, the "sunk costs" case, the Gulf refinery can stay in business at lower product prices than any OECD refinery. Of course, it must lose money to do so.

What the table really demonstrates is not that particular refinery locations have an advantage. The uncertainties in the assumptions are far too great for drawing definitive conclusions. What the table Table demonstrates is that given present subsidies, Gulf refineries are in a competitive range with existing operations elsewhere.

Another way to look at the problem is to merely consider cost differences across time. In constant dollars, the Gulf refinery has a $68 million/year advantage in combined transport, energy, and other operating costs; it has a $400 million disadvantage in capital costs at the outset. Spreading the $400 million over two years and running the $68 million/year advantage out over 15 years indicates that the present value of the cost disadvantage of the Gulf refinery relative to a new

TABLE 13
Annualized Capital Charges for Hypothetical 250,000 b/d Refinery

Annual throughput = (250,000 b/d) X (.85) X (365 d/yr)/(7.3 b/ton)
= 10.63 million tons/year.

Annual output = throughput-loss as nonsaleable byproducts
= 10.63-(10.63x.025)
= 10.36 million tons/year.

Period of Analysis: 15 years
Inflation Rate: 10 percent per annum
Figures in Real Terms.
Cost of Project: In OECD: $1 billion
In Gulf: $1.4 billion

Case 1) 15% Annuity for Company, 10% for Government.

GULF		OECD	
Govt equity, $210m at 10%	= $27.61m	Company equity, $150m at 15%	= $25.65m
Concessionary loan, $840m at -5%	= $36.25m	Commercial loan, $850m at 2%	= $66.15m
Partner's Equity, $210m at 15%	= $35.91m		
Commercial loan, $140m at 2%	= $10.90m		
Annual Charge	$110.67m		$91.80m
Charge per ton of product	$ 10.68		$ 8.86

Case 2) 15% Annuity for Company, Government Recovery of Nominal Equity.

GULF		OECD	
Govt equity, $210m at -10%	= $5.44m	Company equity, $150m at 15%	= $25.65m
Concessionary loan, $840 at -5%	= $36.25m	Commercial loan, $850 at 2%	= $66.15m
Partner's equity, $210m at 15%	= $35.91m		
Commercial loan, $140m at 2%	= $10.90m		
Annual Charge	$88.50m		$91.80m
Charge per ton of product	$ 8.54m		$ 8.86

Table 13 (Cont'd)

Case 3) "Sunk Costs": No Returns to Equity

GULF		OECD	
Concessionary loan, $840m at -5%	= $36.25m	Commercial loan, $850 at 2%	= $66.15m
Commercial loan, $140m at 2%	= $10.90m		
Annual Charge	$47.15m		$66.15m
Charge per ton of product	$ 4.55		$ 6.39

TABLE 14
Estimated Refining Costs Per Ton of Refined Product,
Gulf and North Europe

	New Gulf Refinery	Existing OECD Refinery	New OECD Refinery
Case 1.			
Capital charge	$10.68	$ 2.12	$ 8.86
Energy costs	$ 1.25	$11.54	$11.54
Operating costs	$ 9.22	$ 9.22	$ 9.22
Crude transport	--	$ 9.30	$ 9.30
Product transport	$13.00	--	- -
Total	$34.15	$32.18	$38.92
Case 2.			
Capital charge	$ 8.54	$ 2.12	$ 8.86
Energy costs	$ 1.25	$11.54	$11.54
Operating costs	$ 9.22	$ 9.22	$ 9.22
Crude transport	--	$ 9.30	$ 9.30
Product transport	$13.00	--	--
Total	$32.01	$32.18	$38.92
Case 3.			
Capital charge	$ 4.55	$ 2.12	$ 6.39
Energy costs	$ 1.25	$11.54	$11.54
Operating costs	$ 9.22	$ 9.22	$ 9.22
Crude transport	--	$ 9.30	$ 9.30
Product transport	$13.00	--	--
Total	$28.02	$32.18	$36.45

OECD refinery is $28 million at a 15 percent discount rate; at 10 percent discount rates, the Gulf has an advantage of $88 million. With financial subsidies in initial capital costs, the Gulf refinery may be close to competitive with existing OECD plants.

Contraction in the OECD

Since most of the world's refining capacity is in the OECD nations, it is hardly surprising that the OECD contains most of the world's surplus capacity as well. If plants under construction come onstream, and no scrapping occurs, OECD capacity (including Guam, Puerto Rico and the U.S. Virgin Islands) will rise to almost 50.2 million b/cd. Since OECD consumption is projected to drop to 35 million b/d by 1985, this would indicate a capacity factor of around 70 percent--if no products were imported from outside the OECD. In 1979, the net imports of the OECD nations were about 3.3 million b/d; IEA projections see this falling to 2.9 million b/d by 1985.[72] Subtracting this from the 35 million b/d of OECD demand indicates a demand on refineries of around 32.1 million b/d, implying a capacity factor of about 64 percent. The OECD excess capacity would then be on the order of 18 million b/cd.

The estimate of 18 million b/cd is, of course, too high; this is the amount of capacity that would have to be scrapped for the remaining plants to run at 100 percent capacity factor. Taking a more modest goal, raising OECD capacity utilization to 85 percent of calendar day capacity would require scrapping about 12.4 million b/cd of capacity. Naturally, this depends on the rate of product imports into the OECD; if the IEA estimate of 2.9 million b/cd is too low, then scrapping must be greater, and if 2.9 million b/cd is too high then scrapping could be less.

A rough guide to the situation is presented in Table 15. The table shows the amount of capacity which must be scrapped to obtain a desired operating rate at a given rate of product imports. The figures make grim reading; even if OECD refiners are able to fend off all product imports, massive amounts of scrapping will have to take place to raise capacity utilization to acceptable levels of throughput.

The table, of course, covers a wide range of outcomes. Not all of these outcomes are likely. For varieties of reasons we think it unlikely that the OECD will be able to avoid substantial imports of products in the 1980s. The fact that the OECD is already importing on a large scale, in excess of 3 million b/d, is crucial. Market penetration has already occurred, and trading networks are already in place.

Exports from some areas will slump. Product imports from the USSR/Eastern Europe may simply not be available. Caribbean entrepot refineries formerly supplying products to the United States will likely curtail their operations greatly. Drops in demand for fuel oil will affect nations such as Venezuela unless their cracking capacity expansions are well advanced by 1985. But OPEC nations will have a substantial amount of excess oil products entering the market.

Referring back to Table 15, the IEA estimate of product imports (about 2.9 million b/d) indicates that the OECD will have to scrap 4.5 million b/cd of capacity to reach 70 percent capacity factors, and 10.2-12.6 million b/cd to get into the 80-85 percent utilization range. Is it possible to scrap capacity on this kind of scale? Once the trends are clear, and shrinking domestic demand and increases in foreign export capacity become an accepted part of the oil industry's operating environment, companies may race to back out of the business. British

TABLE 15
Scrapping of OECD Refinery Capacity Needed
To Achieve Given Capacity Utilization Factors
(Million b/cd.[a])

Desired Capacity Factor	Product imports into OECD, million b/d					
	0.0	1.0	2.0	3.0	4.0	5.0
70%	0.2	1.6	3.1	4.5	5.9	7.3
80%	6.5	7.7	9.0	10.2	11.5	12.7
85%	9.0	10.2	11.4	12.6	13.7	14.9
90%	11.3	12.4	13.5	14.6	15.8	16.9

[a] Assumes OECD demand at 35 million b/d in 1985-86.

Petroleum has announced the scrapping of 40 percent of its European capacity eliminating 800,000 b/cd by 1985-86.[73] Exxon plans to scrap one of its West German refineries, cutting about 100,000 b/cd.[74] *Petroleum Intelligence Weekly* believes it has identified about 2.8 million b/cd slated for closure in Western Europe.[75] *Oil and Gas Journal*, apparently basing its conclusions on interviews with company officials, thinks that companies are contemplating cuts in Western Europe on the order of 4.5-6.5 million b/cd by 1985.[76] Our industry contacts indicate that over 3 million b/cd are probably already shut down in the United States, but it is not clear that all of this is intended for permanent closure.

The European cutbacks under discussion are of the right magnitude. Under an optimistic scenario of 12-13 million b/d of European demand and European product imports of about 1 million b/d, scrapping 6.5 million b/cd of capacity could raise European capacity factors to 76-83 percent; cutting by 4.5 million b/cd would raise capacity factors to 67-73 percent. If only the cuts announced by BP and Exxon proceed, however, capacity factors between 53-57 percent will be the order of the day.

Europe stands a good chance of achieving major reductions in capacity. Many companies have experienced losses for three years in a row, and the recent declines in crude oil prices have brought little relief. By means of drastic action, European refiners may be able to pull their industry back toward profitability. The scale of the cuts under discussion is unprecedented, but the past decade has been full of unprecedented events.

The real worry for the 1980s is the refining industry in the U.S. Whereas Europe's decline in oil demand is beginning to level out, the United States is just beginning its great downward slide; the effects of full price decontrol are still working their way through the economy. In 1979, U.S. refineries were still running at 81 percent capacity factor; if imports of products continue at their 1979 level, and only those plants actually under construction are completed, 1985 capacity factors will be around 67 percent. Unless the United States takes steps to reduce capacity and cancel expansions, the American oil industry of 1985 will look like the European oil industry of 1980. Japan's position is similar to that seen in the United States, although the necessary cutbacks will be far less in absolute terms. Cutbacks in both areas will have to be even greater if product imports are greatly increased.

As Table 15 showed, product imports make a very real difference in the amount of capacity that must be scrapped to obtain an acceptable utilization rate. This invasion of domestic markets by export refineries as discussed earlier in this paper, essentially represents two types of capacity in competition with each other. Some of the scrapping that needs to occur in the OECD could be avoided if Export refineries elsewhere were scrapped instead. Note that we say "some" of the scrapping in the OECD could be avoided. The OECD has a worsening surplus capacity problem without competition from Export refineries elsewhere; the refineries operating or planned in the oil-exporting nations make a bad problem worse, but they did not generate the problem.

Other than staunching the present losses in the refining industry, what effect will OECD scrapping have on refining? It is difficult to make unqualified generalizations in this regard, but we wish to offer our generalizations first and qualify them later. Scrapping will undoubtedly improve the general quality of refineries in the OECD. In deciding whether to keep a refinery going, a company is faced with the choice of shutting down or taking measures to remain competitive. In a rapidly changing market, with sudden shifts in feed availability as well as changes in demand, the key to competitiveness is flexibility. The costs of a highly flexible refinery are considerably greater than those of a hydroskimming plant, but these costs are a kind of insurance against really major losses when market changes occur.

A refinery without significant upgrading capacity cannot avoid making large amounts of fuel oil unless it has reliable access to especially light crudes. These premium crudes are exactly those that tend to have the most volatile price behavior when the market tightens. Refineries in the OECD that are "addicted" to a particular foreign crude cannot help making losses during periods when prices are rising. Moreover, reliance on a particular quality of crude makes refiners unable to take advantage of significant price differentials that may emerge. It is precisely this lack of flexibility that allows crude quality price differentials to exceed the value of the quality to the refiner. If the consuming market had sufficiently flexible refineries, when certain producers of light crudes pushed their prices too high the consumers would switch to heavier crudes, gradually allowing the market to adjust prices.

There has been a flurry of interest in upgrading facilities in the 1979-81 period. Approximately 3.7 million b/cd of cracking units or expansions were planned at about 110 separate sites.[77] If completed, these projects will expand world cracking capacity by almost 30 percent. About 2.2 million b/cd of this expansion is planned for OECD refineries. However, a large number of these facilities are planned for refineries that already possess a significant amount of cracking capacity. It should also be noted that many of these units were planned prior to the major financial losses in 1980 and 1981; many companies previously considering investments in upgrading may now be more inclined toward scrapping instead.

Despite the fact that sophisticated refineries may cost more than twice as much as simple hydroskimming arrangements, simple refineries have suffered a steady cost disadvantage in the value of products produced. Furthermore, simple refineries are generally older and often near full amortization. More sophisticated refineries are usually more recently built, or have experienced recent upgrading. These factors—the difference in the financial loss upon scrapping, and the competitive disadvantage of the simpler units—make it most likely that the simpler refineries will be selected for scrapping.

A key factor to examine in evaluating the sophistication of a refinery is the presence of sufficient vacuum distillation capacity. This is an important indicator, not because vacuum capacity is important *per se*, but rather because vacuum distillation is an important precursor to so many cracking operations. To be more precise, out of the almost 300 refineries in the non-communist world that lack vacuum distillation capacity, only about 45 have any sort of cracking capacity, and even these cracking facilities tend to be undersized.[78]

The 300 refineries lacking vacuum units represent about 14.8 million b/cd of crude distillation capacity. Of these, over 200, representing about 10.3 million b/cd of capacity, are in the OECD. About 110 are in the United States, but these represent only about 1.5 million b/cd of crude capacity; the average size of such a refinery in the US is only about 13,000 b/cd, whereas in the rest of the OECD the average refinery lacking vacuum distillation capacity is close to 100,000 b/cd in size. In part, this reflects the special advantages small refiners have had in the United States; in part it reflects the fact that United States refineries are generally more sophisticated than those found elsewhere in the world. The US has more catalytic cracking and hydrocracking installed than the rest of the world combined. In Europe there are a number of large refineries with no cracking facilities at all.

In summary, we believe that the general trend will be for those refineries without cracking capacity to be scrapped. The qualifications to this generalization are manifold. First, it is possible that selected refineries will receive major upgrading investments by companies that wish to maintain a presence in a particular market. Second, some refineries may be saved by government policy. Third, some relatively sophisticated capacity may be shut down as well in countries where overcapacity is particularly great or where the general level of sophistication in refineries is high; it is impossible, for the United States to dispose of more than about 2 million b/cd without including plants that are sophisticated by world standards.

The scrapping of unsophisticated plants, coupled with present plans for new cracking facilities, will result in a dramatic improvement in the capabilities of the average OECD refinery. The scrapping that will occur in the 1980s will improve the average OECD refinery as rapidly as the most aggressive upgrading campaign.

In fact, there is now some concern that a surplus of cracking capacity is emerging in Europe; a recent drop in gasoline prices was partly blamed on "excessive" use of cracking.[79] A slight surplus is certainly possible in the short term. However, the surplus is liable to be a surplus of catalytic crackers, designed to maximize gasoline output; most hydrocracking operations should be able to adjust their output mix enough to obtain profits. In the slightly longer term, Europe may be grateful for its cracking capacity; fuel oil demand will be declining rapidly, and this material will either have to be cracked to lighter products or unprofitably dumped on the market. Furthermore, the average crude available for import in the 1980s is projected to become steadily heavier, producing a higher proportion of fuel oil from each barrel.[80]

There are a variety of reasons for the increase in the proportion of heavy fuels that will be entering the market. First of all, the average gravity of the known resources is becoming heavier.[81] Second, many exporting countries, after discovering that their lighter oils were being depleted while their heavier oils remained largely untouched, have begun to introduce policies regarding the mix of crude oils that will be produced; the ratio of "50-50" between light and heavy crudes seems popular with governments.[82]

If the OECD nations are successful in reducing the surplus capacities seen at present, however, the increased flexibility of the average OECD refinery should allow refiners to adjust to shifts in the gravities of crude available for import. Yet this conclusion does not reckon with the fact that nations will be importing products from outside the OECD. The balance between the supply mix and the demand mix does not depend on the capabilities of OECD refineries alone; it is intimately tied to the capabilities of export refineries elsewhere.

Conclusions

The world petroleum market is continuing to undergo structural changes. One such structural change is in the refining industry, where the turmoil is inflicting great financial damage to the industry. The crisis in refining may not have caught the attention of the media or politicians; but nevertheless its impacts are serious and far reaching.

The problems of the world refining industry are likely to continue and worsen over the 1980s. Massive excess capacities are already with us and the impact of OPEC refineries will make a bad situation worse. OPEC refineries—whether we classify them as economic or not—are being built and will become a major force in the oil market. Current financing feedstock prices and contractual arrangements will ensure that OPEC product exports will be price competitive and can be marketed. The marketing of OPEC products will take place either through joint venture partners or independently. If and when the crude oil market tightens again, OPEC nations will be in a strong position to package crude exports with product exports.

The international refining industry will be affected differently around the world—depending on ownership, staying power, crude sources and export markets. But it is quite clear that something has to give; the present situation cannot go on for long. Unfortunately, the market induced correction mechanisms will not work smoothly. Many refiners will resist scrapping or closures, hoping for a miracle: the large upswing in demand for oil. Many new refineries will be built, particularly in the Third World, on the mistaken notion that their own refineries will enhance security of supply and provide value added.

The major oil companies have been quicker to respond to the overcapacities. Independents may want to fight it out, take losses for a few years and hope for the best. For all their bravery, our conclusions remain unchanged: massive scrapping must take place to increase capacity utilization rates from the current dismal levels to profitable levels. Unsophisticated refineries cannot hope to survive the highly competitive market of this decade. We realize that this is a painful process for many refinery owners, but the longer they stay in the market, the more losses they will make and they will yet have to scrap. Governments in some countries might be tempted to intervene to respond to political pressures for saving inefficient refineries. This possibility can lead to grim consequences as other governments will be forced to do the same to help their refineries, and the market could end up with even larger losses and dislocations. It is best, we feel, to accept the new realities and try to "rationalize" the inefficient industries rather than prolong the agony.

To

Finally, we would like to point out that for OPEC nations, every barrel of oil refined is a barrel not available as crude exports. Thus, product exports will replace a portion of crude exports but not necessarly lead to higher aggregate exports. This means that attempts to use adminstrative/tariff barriers to stop the flow of OPEC products will not be successful and would lead to further delays in the readjustment process.

Mr. HILL. We are a basic industry. And we are processing raw materials into energy needs for almost every other basic industry in the United States. We are capital-intensive, I think, as most basic industries are. In 1982, there was over $6 billion in new investment in the refining industry alone.

The industry contributed $22 billion to the gross national product, which was roughly 5 percent that year. The industry employs presently a little over 100,000 very highly skilled technical people. However, the industry is in decline and there has been a loss of nearly 50,000 jobs in just the last 2 or 3 years.

The decline in the industry has been approximately 15 percent of actual capacity shutdown in the past 2 years. In that capacity shutdown, there has been about 103 refineries shutdown. Now many of those were small refineries, and many of them were independent refiners.

However, our operating costs continue to go up. Capital investment continues to go up because the processing of crude oil is changing. The quality of the crude that we are working with is declining, yet the quality of the petroleum products that is demanded by industry and the public is going up. We just have to add better technology to meet the needs of this country.

Despite the excess capacity—and right now the remaining capacity that is operable that has not been shut down is operating at only about 75 percent. Despite this excess capacity and declining demand for petroleum products, the OPEC countries are proceeding to construct new refineries, notwithstanding this excess capacity. And they have set a goal that by 1990 that they wish to be producing one-third of their exported oil in the form of finished petroleum products. And this is approximately 7 million barrels per day, which, again, is about half of what this country is consuming overall. And they have designated as their designated markets the United States, Western Europe and Japan.

We also think that it would be a mistake for this country to rely on foreign refineries to supply both the civil and military fuels that we will be needing in the future. Also, if we let our refining capacity be exported to the OPEC countries and to other European countries, it's going to be very difficult to defend those refineries in the event of a crisis.

Mr. Chairman, we hear much about import fees on crude oil. Reports have appeared frequently in both discussions in Congress and in the media. If there should be an import fee put on crude oil, we would like to suggest that there be a higher import fee put on petroleum products that are brought into the country. The reasoning behind this is that we have the problem of the Jones Act relative to transportation; we have the EPA regulations; and we have other Federal, State and local regulations that continually increase our cost of doing business.

We think, Senator, that we would like very much to have a domestic refiner represented on a new industrial sector advisory committee on energy which has been created in the Commerce Department. And in looking at the various tax considerations, we support the testimony of the previous people here in that we do need some way to utilize the ACRS and the investment tax credits. And we are just unable to do that.

Almost all of the independent refiners have suffered operating losses for 2 years now. And most of them are getting in a very precarious situation financially. There have been 103 refineries that have shutdown.

Senator DOLE. The same basic problem. Maybe the system is too generous. Maybe it's time to take a look at the whole ITC and ACRS areas. A lot of the oil problems result from OPEC policies which we probably haven't dealt with as well as we could have.

We are sympathetic. We are sympathetic to everybody that comes in here. But if every Senator that had an idea of how to spend another billion dollars succeeded, we would really be in difficulties. I don't quarrel with the motives of those who feel the best way to go is to get it from Treasury, but our big problem is deficits and interest rates. And unless there is some way to rearrange our priorities, it's going to be very difficult in my view for the Congress to further reduce revenues.

That's my view. I think we ought to go through the Tax Code and rearrange some of these obsolete priorities that are called tax breaks to some and "incentives" to others. And we need to look at the whole tax code. We are starting that process, and made some headway last year. But the appetite, I must say, is not as great this year.

But we appreciate your testimony, and your coming to Washington. Thank you very much.

Mr. HILL. Pleased to be here, Senator. Thank you.

Senator DOLE. Mr. Bedell.

STATEMENT OF DENNIS P. BEDELL, CHAIRMAN, AMERICAN MINING CONGRESS TAX COMMITTEE, WASHINGTON, D.C.

Mr. BEDELL. Thank you, Senator Dole.

I'm Dennis Bedell, chairman of the Tax Committee of the American Mining Congress, and I appear before you today on behalf of the American Mining Congress. I shall quickly summarize my points.

There should be no question that we do not have a viable alternative to the maintenance of a healthy domestic mining industry. In order to achieve that objective, a number of policies in a variety of different areas, not just the tax area, are required. For example, there must be reasonable policies on land use so that there is a balancing between environmental concerns and economic use of the minerals that underlie our land. There must be fiscal and monetary policies that promote a strong and vigorous economy.

We must have rules and implementation of fair competition in the international marketplace. Our environmental, health and safety practices must reflect a reasonable and realistic balancing of costs and benefits, and must also be cognizant of the fact that foreign mineral producers against whom we compete enjoy or are subjected to a much looser regulatory framework.

We need sound international economic policies. And, particularly, international lending policies that do not operate to benefit unfairly subsidized and uneconomic foreign mineral producers that are owned or controlled by foreign governments.

Of course, as part of the totality of the package of policies, we do need tax policies that recognize the need of the mining industry for the very substantial amounts of capital required to carry on its tasks.

Historically, our tax policy has recognized the unique nature and fundamental importance of the mining industry through provisions such as the percentage depletion allowance and the current deductibility of mine exploration and development expenditures. Unfortunately, over the last 15 years there has been a gradual erosion in the direction of tax policy. We saw in 1969 the corporate minimum tax, which is an indirect cutback in percentage depletion, adopted. We saw percentage depletion rates reduced in 1969. And as you alluded to, last year in TEFRA we saw a reduction in coal and iron ore depletion, which takes effect next year as presently enacted, and a reduction in the deduction for mine exploration and development expenses.

For the future, we strongly recommend that this process of erosion of the incentives provided through the tax system to the mining industry be halted. And to the extent sound fiscal policy permits, the erosion which has already occurred, such as through the minimum tax, should be reversed and the direction of tax policy should be shifted to support the mining industry and its needs for obtaining capital to develop our mineral reserves.

Thank you, Mr. Chairman.

[The prepared statement of Dennis P. Bedell follows:]

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STATEMENT
OF THE
AMERICAN MINING CONGRESS
TO THE
SUBCOMMITTEE ON ECONOMIC GROWTH, EMPLOYMENT, AND REVENUE SHARING
COMMITTEE ON FINANCE
UNITED STATES SENATE
BY
DENNIS P. BEDELL
CHAIRMAN, AMERICAN MINING CONGRESS TAX COMMITTEE
SEPTEMBER 23, 1983

Mr. Chairman and Members of the Subcommittee:

My name is Dennis P. Bedell. I am Chairman of the Tax Committee of the American Mining Congress and a member of the Washington, D. C. law firm of Miller & Chevalier, Chartered.

I am appearing before you today on behalf of the American Mining Congress. We appreciate this opportunity to testify with respect to the issue of the future of U. S. basic industries.

The American Mining Congress is an industry association representing all segments of the mining industry. It is composed of (1) U. S. companies that produce most of the nation's metals, coal and industrial and agricultural minerals; (2) companies that manufacture mining and mineral processing machinery, equipment and supplies; and (3) engineering and consulting firms and financial institutions that serve the mining industry.

In assessing the future of the domestic mining industry, the fundamental point to be borne in mind is that there is no viable alternative to the maintenance of a healthy domestic mining industry. The economic well-being of the United States and our national security rely on there being a strong domestic minerals base and a strong domestic mining industry which has the capability of utilizing that base to provide the minerals that are the backbone of our industrial economy and our national defense.

There are a number of policies which the American Mining Congress believes should be followed to nurture and sustain a healthy domestic mining industry. An overview of these policy objectives is set forth in the statement of policy of the American Mining Congress as follows:

> Access to Minerals
>
> Because geological evidence indicates that there may be potential mineral deposits on public lands, the continuing withdrawal of these lands from mineral exploration and development will detract from expanding the domestic mineral base. Multiple use of public lands, including mining, should and can be practiced to provide a balance of

environmental responsibility and economic results.

The National Defense Stockpile should be prudently maintained for use in national emergencies, but it should not be employed for economic or budgetary purposes.

Adequate Markets

Domestic mining is capital intensive and must compete in world markets. It can thrive only in a healthy world economy that stimulates broad needs for its production.

The U. S. Government should adhere to fiscal and monetary policies that encourage vigorous economic activity at home, while supporting policies of free-market disciplines in other countries.

Fair Competition

Global economy, with its increasing interdependence among nations, can thrive only in a climate of fair competition.

Foreign dumping of goods, direct subsidy of exports, unreasonable restrictions on return of capital, manipulation of currency exchange rates, and acts of price protection should be firmly resisted because they give unnatural advantage to the favored competitors.

The United States should also oppose any bilateral or multilateral financial support that serves to promote uneconomic production and helps initiation or expansion of projects for production of materials that are already in oversupply worldwide.

Reasonable Earnings

The mining industry needs sufficient earnings to maintain a healthy financial condition that can attract the large capital requirements for investments in replacing

> depleted resources while permitting a reasonable return to the shareholders.
>
> In imposing costs on the domestic industry by way of taxation and environmental regulations, the U. S. Government should take into account costs elsewhere in the world where many foreign minerals producers operate with looser regulatory standards.
>
> Although mining should pay its appropriate share of costs relating to environmental, safety, health, and other important concerns of the American public, there should be a realistic balancing of costs and benefits that takes into account the need for economic growth.

Thus, there is a need for policies which provide access to minerals, adequate markets, fair competition and reasonable earnings.

An area of particular concern to the American Mining Congress is the distortions being caused in the international minerals and metals commodities marketplace by the lending policies of the World Bank, the International Monetary Fund, and other international developmental financial institutions. This concern is addressed in an AMC paper entitled "International Lending Policies and Their Effect Upon the Minerals and Metals Industry" which is attached as an exhibit.

Now I would like to focus on the importance of investment in the domestic mining industry and the need for sound federal income tax policies in achieving the desired investment climate for the mining industry.

Investment Needs of the Industry

For the domestic mining industry to meet the challenge of obtaining the minerals the nation will need in the years to come, substantial investments must be made requiring the expenditure of tremendous amounts of capital. Existing facilities must be expanded and modernized to more effectively exploit known mineral deposits. In addition, new deposits must be discovered and developed.

The discovery and development of minerals in the United States is becoming more and more costly. Most of the high grade mineral beds have already been discovered. The ones left generally are deep, low grade deposits. Today, the mining industry must expend great sums of money on exploration and development in the United States. This exploration requires sophisticated and expensive geological, geochemical, and geophysical equipment. Underground exploration is particularly costly. Moreover, in many cases, the deposits that are discovered are of such a low grade that the technology required to make mining and processing economically feasible must first be developed. Also, to process low grade ores at an economically attractive cost requires tremendous capital investment in facilities for large-scale operations.

The American mining industry is also faced with large increases in required capital expenditures as a result of the extensive environmental and health and safety legislation affecting the industry which has been enacted in recent years.

These expenditures, which do not add to productive capacity or result in any significant economic return, further increase the mining industry's capital needs.

In recent years the industry has been required to turn increasingly for capital funds to debt financing, thereby significantly increasing the industry's debt burden and its debt/equity ratio. The industry's ability to generate capital internally and to attract outside capital is dependent on its profitability, which determines its cash flow and return on investment. The lower the industry's profits are, the less funds there are generated internally to meet capital needs. Moreover, inadequate profitability seriously impairs the industry's ability to obtain external financing. Even if the industry is able to attract the needed funds, inadequate profits impair its ability to service new debt burdens.

The heavy inflation of recent years also has placed substantial additional burdens on the mining industry. As a result of inflation, the industry is encountering substantially higher replacement costs. Moreover, it is faced with rapidly escalating costs on uncompleted mine development projects. The discovery of an ore body and the development of a mine are a long-term, 5- to 10-year project. The inflation induced escalation of costs of mining projects has imposed substantial new and uncontemplated capital expenditure burdens on the mining industry.

Rising energy costs, increased imports, and the adverse economic circumstances of recent years in the case of a number of major mineral sectors also have impaired the mining industry's ability to carry on the necessary maintenance and expansion of our mineral productive capacity. Moreover, the profitability of certain domestically produced minerals has been severely eroded in some cases by excessive production of government-controlled overseas operations which trade off profitability for employment and foreign exchange.

It also must be borne in mind that the mining industry is a cyclical industry. Historically, periods of profitability are followed by periods of low profits or even as in recent times substantial losses. Our tax policies must be formulated in such a manner that they take congnizance of this basic characteristic of the industry.

Role of Tax System

Historically, our federal income tax system has recognized the fundamental role of this country's mining industry and its importance to our economy and national defense by the inclusion in the tax law of provisions such as the percentage depletion allowance and the current deduction for hard mineral exploration and development expenditures. These provisions recognize the unique nature of a mineral deposit and the fact that exhausted mines are replaced with deposits which are more difficult and expensive to discover and operate. They also reflect the fact that investment in the exploration [illegible], and replacement and development of, mineral deposits involves greater risks than investing in capital goods generally so that a premium is necessary to attract the needed funds.

In more recent times, however, there has been a gradual erosion of the tax structure provided with respect to the mining industry which, if allowed to continue, could seriously impair the mining industry's ability to carry out the task committed to it. This process began in 1969 when percentage depletion rates were reduced and the minimum tax applicable to corporations was adopted. Although the minimum tax grew out of a concern with individuals who paid little or no tax, it was as enacted applied to corporations and to deductions which arose in the ordinary course of carrying on business operations such as the percentage depletion deduction. Over the years the scope of the corporate minimum tax has been broadened and its rate increased. The corporate minimum tax is perverse in effect since it falls on those companies with relatively poor operating earnings, particularly those which are investing to modernize their facilities and thereby generating investment tax credits. It, thus, is especially burdensome for those making the greatest effort to improve their productive capability but which already find it difficult to obtain the needed funds because of their poor or non-existent earnings.

Last year this process of erosion continued in the Tax Equity and Fiscal Responsibility Act when further inroads were made with respect to the tax treatment of the mining industry.

The coal and iron ore percentage depletion deduction was reduced by 15 percent, effective next year. In addition, the deduction allowed for mine exploration and development expenses was reduced by 15 percent, although certain ameliorating offsets to this reduction were provided.

An important positive development of recent years was the initial policy recognition in the Economic Recovery Tax Act that during cyclical downturns such as the mining industry was then undergoing, it was necessary in providing capital formation incentives, such as the Accelerated Cost Recovery System, to also provide a means by which the benefit of these incentives could be made available to companies with temporarily depressed or non-existent profits. During the course of development of ERTA, various means were considered by the Congress to accomplish this goal. The final result was the inclusion of safe harbor leasing in the Act as adopted. These rules recognized the fact that companies, such as those in the mining industry, which had both heavy capital investments and low earnings should be provided with equal access to the benefits of the capital cost recovery tax incentives. Unfortunately, the mechanism provided by safe harbor leasing which permitted the capital formation tax benefits of ERTA to flow to mining companies enjoyed only a very short life. This leaves many of the companies in the mining industry in exactly the position the safe harbor leasing provisions were designed to avoid. Companies with the greatest need to invest have the most limited sources of capital.

Future Direction of Tax Policy

To maintain a strong, viable domestic mining industry, the erosion of the tax structure applicable to mining which has been transpiring in the last fifteen years must be halted. The tax policy direction must be shifted to one of improvements in the tax system that would enhance the economic and investment climate for the mining industry. To reverse the process of erosion, the corporate minimum tax should be made inapplicable, whether by repeal or otherwise, to items that arise in the ordinary active conduct of business operations. In addition, the 15-percent reduction in the amount of mine exploration and development expense deductions contained in TEFRA should be restored. Also, the proposed 15-percent reduction in the coal and iron ore percentage depletion deduction scheduled to take efect in 1984 should be repealed (as would be accomplished by S. 1006 and H.R. 3353).

Some improvements to the federal tax system that would be of assistance to the mining industry include the clarification of the treatment of mine reclamation expenses (as would be provided by S. 237, S. 1307, and H.R. 3342), the extension of the energy tax credit (as would be provided by S. 1305, S. 1396, and H.R. 3072), revision of the foreign tax credit (as contemplated by S. 1584) to extend the carryover period and conform the treatment of domestic losses to the treatment of foreign losses), and the inclusion of the minerals industry within the scope of a replacement for DISC (as would be provided by S. 1804 and H.R. 3810).

One of the most important improvements which could be made to the tax system to improve the investment climate for the mining industry would be the adoption of mechanisms which allow the industry to obtain the benefits of investment tax credits earned in the past but not yet utilized because of the low or non-existent profits of the companies and which would allow the benefits of investment tax credits and cost recovery allowances earned in the future to be made equally and currently available to mining companies even though they may be suffering temporarily depressed or non-existent profits. In other words, a politically acceptable substitute capital formation provision must be found for safe harbor leasing. The problems which created the need for safe harbor leasing insofar as the mining industry is concerned still exist and should be recognized.

Conclusion

The nation's economic well-being and national security are dependent upon a strong and vital domestic mining industry. For the industry to exist and carry out its task, there is a need for a strong, stable economic environment and investment climate, particularly at this time when the industry must recover from a rescession that has been exceptionally long and severe. As has been the case historically, our tax policies must recognize the importance of the mining industry and of encouraging investment in this fundamental sector of our economy.

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June 24, 1983

American Mining Congress
POLICY POSITION PAPER

International Lending Policies and Their Effect Upon the Minerals and Metals Industry

The American Mining Congress calls upon the U.S. government to address the problem of distortions being caused in the international marketplace for minerals and metal commodities by international lending policies of the World Bank, the International Monetary Fund (IMF), and other international developmental financial institutions.

This issue is serious and involves the future ability of the private sector mining industry, based principally in the United States and Canada, to compete in a free market environment with mining industries that are either entirely State-owned or at least partially government subsidized and controlled. In recent years one consequence of this widespread government-owned or controlled or subsidized production has been to shift most of the burden of commercial adjustment in the world marketplace to our free market producers and their employees.

During periods of depressed demand and weak prices, government owned or controlled production of a variety of mineral commodities in Third World countries is maintained at capacity levels and exported to world markets in order to generate foreign exchange and to maintain full employment levels. These production and export policies persist in spite of reduced demand and even though prices are at levels that are often below cost. Indeed, production for some mineral commodities such as copper is even being expanded substantially in some Third World countries, despite current expectations of ample supply conditions in world markets. Meanwhile, minerals production by North American companies has been curtailed substantially because of depressed market conditions, with widespread unemployment among private sector mining industry workers. This situation, if it persists over the long-term, diminishes the degree of U.S. self-sufficiency in strategic minerals production, the industry's ability to provide these minerals at reasonable prices, and ultimately the availability of the minerals.

International lending agencies which receive U.S. financial support are providing project and development loans, frequently at below-market rates, to fund new production capacity, and the IMF provides support which indirectly relieves producing countries of the consequences of their uneconomic production policies.

One adverse effect of the IMF lending policies to developing countries dependent upon mineral exports is to subsidize and finance continued production regardless of production and market economics. (These policies can be contrasted with present U.S. agricultural policy which provides government subsidies to *discourage* production in surplus markets.) A second adverse effect has been a *de facto* encouragement of private commercial banks to lend to these developing countries, with the comfort that the IMF will step in to avoid default.

The *combined* long-term impact of project and development loans and IMF lending policy has unfortunate consequences:

-Expansion of capacity in mineral commodity markets with unrealistic regard to need.

-Investment in productive capacity which in many cases is uneconomic.

-Prolonged depressed market conditions in mineral commodities with possible irreversible effects for U.S. mining properties that would otherwise be viable and competitive and for employment in the U.S. mining industry, leading to greater U.S. import dependence and risk to sudden supply curtailments or to monopolistic price increase by foreign producers.

-Perpetuation of over-dependence upon mineral commodity exports for export earnings by mineral producing Third World nations -- compounded by continued depressed market conditions.

-A perpetuation and aggravation of structural balance of payments deficits combined with increasing debt burdens for mineral-dependent Third World nations.

NATURE OF THE PROBLEM OF LENDING PRACTICES

International Lending Institutions

Many international lending institutions have not adequately taken into account the impact of some of the projects being financed on the economies of both the borrowing and the lending nations, or on the global markets for the commodities concerned. More appropriate standards would assess with greater realism the economic viability of individual projects and screen out those which are marginal at best or which can only be sustained by government support, subsidy or ownership.*/ Projects that are not inherently economic should not be supported or undertaken. Uneconomic projects, (1) ultimately consume more resources than they provide, and (2) divert limited financial resources from better alternative uses. Along with their role in financing the development of the Third World, the industrialized nations bear a responsibility to themselves, to the rest of the world and ultimately to the Third World not to encourage uneconomic development.

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*/ See, e.g., "Centromin Invests $261 Million to Expand Cobriza Production," Engineering and Mining Journal, August 1982, pp. 78-83. See also "Report and Recommendation of the President to the Board of Directors on a Proposed Investment in Compania Minera de Cananea S.A., Mexico," July 1, 1982, Document of the International Finance Corporation, Report No. IFC/P-509.

Moreover, the loans of the World Bank and other multinational lending institutions have had the effect of continuing or even encouraging the over-dependence of many developing countries upon one commodity rather than stressing adequately the diversification of the economies of these nations away from sole reliance on a single resource. There has been a trend in recent years to support the integration and expansion of the mineral production of individual Third World countries, regardless of market prospects for the mineral. These expansions, in which financing from private lending institutions has been encouraged by the multinational agencies, have frequently been undertaken for state owned enterprises that are not prepared to market their production in world markets in a prudent manner. The expansions serve not only to further concentrate dependence of individual countries upon mineral export earnings but also to cause harm to the markets for these minerals. The international copper industry provides an example of this trend. Zambia and Zaire, for example, are still, after some 20 years of political independence and an equal period of World Bank support, overly reliant upon the copper industry for their export earnings. Zambi is dependent upon copper for nearly all export earnings and Zaire relies on copper and its by-products such as cobalt for nearly one-half of its export earnings. As a result, wide fluctuations in the price of copper cause an extremely variable flow of earnings to these countries.

The continuing heavy dependence of these Third World countries on the copper industry was not inevitable, and it is not irreversible. Important sectors of their economies are underdeveloped. For example, in Zambia and Zaire commercial agriculture presents a major opportunity for diversification. Both countries are increasingly dependent upon agricultural imports, further contributing to their balance of payments deficits. Yet both have large areas of unused arable land. A study supported by the World Bank reports that Zambia has the potential to be a viable producer of at least three major crops. The mineral-dependent countries in Latin America also have significant diversification opportunities.

To provide export earnings, during periods of depressed prices, state-owned or controlled mining operations in Third World countries continue to produce as much as possible to obtain foreign exchange earnings even while incurring large losses, and even though the effect is to further destroy the market for their own product. To subsidize this uneconomic production, Third World producers must therefore rely increasingly upon external financing, particularly from the IMF, contributing to a self-perpetuating problem of spiraling external debt. This problem has been particularly acute with respect to copper in recent years, but similar problems exist with respect to other minerals produced in Third World nations.*/

Private sector mining companies, in the United States and Canada, are generally hurt by this behavior by Third World producers but do not have their losses underwritten by government or IMF support. Additionally, they are forced to bear the full burden of curtailing production and supply-demand adjustment in the international marketplace. The full-employment programs at Third World mines therefore export unemployment to this country. The imbalance that exists in financing private sector and government-owned production increases the potential threat to national security in terms of the availability of strategic minerals.

U.S. appropriations laws in recent fiscal years have included language requiring the Secretary of the Treasury to take action to deal with this problem. This language, which applied until recently only to the U.S. membership in the World Bank and other development bank institutions, was expanded to include the

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*/ See, e.g. Kinkead, Gwen. "Brazil Looks for Cash In An Iron Mountain," Fortune, International edition, January 24, 1983.

International Monetary Fund in the Continuing Resolution for Appropriations enacted in December of 1982. That Resolution now reads as follows:

> ....the Secretary of the Treasury shall instruct the United States executive directors of the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation, the Inter-American Development Bank, the International Monetary Fund, the Asian Development Bank, the African Development Bank, and the African Development Fund to use the voice and vote of the United States to oppose any assistance by these institutions, using funds appropriated or made available pursuant to this or any other Act, for the production of any commodity for export, if it is in surplus on world markets and if the assistance will cause substantial injury to United States producers of the same, similar, or competing commodity.*/

International Monetary Fund (IMF)

The problem with respect to IMF lending policy arises from its policies on national adjustment required as a condition for its loans.**/ Although the IMF imposes "conditionality" on its loans, this conditionality takes the form of national commitments on broad, macro-economic policies (e.g., monetary and fiscal policies, internal subsidy programs, exchange rate adjustment, and import controls). It is now becoming clear that the IMF balance of payments loans often themselves exacerbate the problem, contributing to uneconomic or surplus mineral production and perpetuating a never-ending spiral of debt burden, which itself must then be re-financed. Moreover, the standard approach of IMF conditionality typically encourages continued production levels, regardless of costs, and exportation at distress price levels in order to generate export earnings.

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*/ Section 131, Further Continuing Appropriations, 1983, Public Law 97-377 [H.R. Res. 631]; December 21, 1982.

**/ The IMF provides balance of payments assistance using one of four financial facilities and its reserve and credit tranche policies. For a discussion of these facilities and conditionality, see e.g., IMF Survey, Vol. II, Supplement to the Fund, International Monetary Fund, November 1982. See also Guitan, Manuel, "Conditionality -- Access to Fund Resources," Finance and Development, (International Monetary Fund), December 1980.

The IMF as a matter of policy does not consider micro-level policies or impacts in determining conditionality.*/ Nor does the IMF consider broader, global marketplace impacts of its policies as applied to individual nations. The result of IMF's approach to conditionality for national balance of payments loans may encourage Third World nations to subsidize State-owned mineral production and to continue exporting to world markets. The long-term result is a perpetuation of surplus market conditions, depressed prices and increasing debt burden for the producing nation, without adequate attention to long-term structural solutions to problems involving the relationship of commodities to balance of payments.

The American Mining Congress calls upon the U.S. Treasury to use its voice and vote in the International Monetary Fund to seek newer and wiser approaches to developing conditionality for balance of payments loans to Third World countries. The issue here -- in terms of the present international liquidity crisis, the impacts upon Third World nations themselves, and the effects upon the international minerals market -- is whether the IMF will continue perpetuating policies of the past which are unable to solve present day economic problems. New approaches to conditionality should take into account, based upon thorough analyses, the following considerations:

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*/ Ibid., IMF Survey, p.2.

-Whether conditionality in fact forces a Third World nation to continue production (or to subsidize production) in times when production should in fact be discouraged;

-Whether stringent austerity programs alone are in fact the ultimate, long-term answer to solving structural payments problems;

-Whether balance of payments loans to a country dependent upon a single commodity will have an adverse effect upon the economies and payments problems of other countries producing the same commodity;

-Whether conditionality should not be based at least partially upon attempts to diversify the economic bases of a recipient nation;

-Whether exchange rate adjustment as a component of conditionality does not in fact artificially change production cost and export economics to have long-term adverse effects upon a nation's balance of payments;

As noted above, the requirement imposed upon the Secretary of the Treasury in appropriations legislation for recent fiscal years has now been expanded to include U.S. membership in the IMF. This authority should be used by the Secretary of the Treasury as a means of developing innovative and creative approaches to this problem. Moreover, the Administration is presently seeking an $8.4 billion increase in the U.S. funding of the IMF in order to meet the problems raised by the present Third World liquidity crisis. The debate surrounding congressional authorization for this increase should be used as an opportunity to encourage the IMF to develop new policies as alternatives to "business as usual" approaches to conditionality which have exacerbated today's liquidity problems and problems relating to the international mineral marketplace.

Commercial Bank Lending

In large part induced by the security offered by IMF lending policies, which provide de facto guarantees of repayment not available to the private sector, there has been a major expansion of international lending in the past decade by the private commercial banks. Recently the President of the World Bank, Ex-Chairman of the Bank of America, referred to this lending as "a borrower's binge." Most of the half-trillion dollars or more of such new lending was in the form of loans to sovereign countries or to projects with repayment guaranteed by foreign countries. It is clear that some of this immense flood of new lending has contributed to the major current problem faced by the minerals industry: continuing high production of minerals in Third World countries, generally subsidized, in one way or another, even though these minerals are already in world surplus.

The American Mining Congress believes that in the future U.S. commercial banks should take a broader and more responsible view of their major lending to sovereign entities and to parastatal agencies and corporations. They must find a way to make allowance for the impact of their combined lending on the world supply and demand balance in basic minerals and other mineral commodities. More sophisticated IMF policies with regard to conditionality and the compensatory finance facility would be a major help in this effort.

The AMC has a further concern with the practice of the international development banks (a major portion of world funding is from U.S. tax dollars) in making major loans to government-owned mineral companies in the Third World - many of them nationalized from former U.S. or other private owners. The AMC is concerned with the apparent dichotomy between our national interest in maintaining the private enterprise system and global economic activity based on the free market principle, and the sizable and increasing lending to nationalized mineral enterprises.

RECOMMENDATIONS

1. Actions to be taken by the Executive Branch

The American Mining Congress calls upon the Adminstration to take the following actions, which can be accomplished by unilateral action and which are intended to help deal with the problem:

a) The Secretary of the Treasury should instruct the U.S. representatives to international financial institutions to use their voice and vote to give increased stress to encouraging development projects aimed at achieving diversification of the economies of Third World nations and to discourage development projects which expand capacity in mineral commodity markets that can be served adequately by private enterprise producers.

b) The Secretary of the Treasury should provide a complete accounting and disclosure of actions that have been taken to carry out the provisions contained in appropriations statutes for international assistance presently enacted for the current fiscal year in Section 131 of the continuing resolution, P.L.97-377, which applies to the International Bank for Reconstruction and Development, other development banks and the International Monetary Fund.

c) The U.S. Treasury should transmit to the President and Congress an annual report with respect to the participation of the United States in the IMF and the World Bank. Treasury should also report to the President and Congress in ninety day intervals, listing all applications which have been filed during the preceding ninety days with both the IMF and the World Bank for assistance that would establish or enhance the capacity of any commodity for export if the commodity is in surplus on world markets and if such assistance would cause substantial injury to a U.S. producer.

d) U.S. policy objectives should consider international commodity markets and individual industrial sectors in making foreign loans and in engaging in foreign, financial, exchange or monetary transactions to minimize adverse impacts and avoid government subsidization of production of international commodities.

e) The U.S. government through its membership in the IMF and World Bank and other development banks should strive to develop coordinated policies and programs between the development banks and the IMF actions.

2. Legislative Actions

The American Mining Congress calls upon the Congress to:

a) Enact legislation requiring the Secretary of the Treasury to instruct the U.S. Executive Directors of multinational development banks and the IMF to evaluate development project loans and balance of payments assistance in terms of their impact upon the U.S. economy, their effect upon the worldwide supply-and-demand balance for individual mineral commodities, and the long-term economic development of a recipient country.

While recognizing that a similar temporary requirement already exists in the continuing Resolution for Appropriations adopted in December 1982, AMC calls upon the Congress to enact permanent legislation to achieve a new degree of accountability in the lending of intergovernmental banks and the IMF. Such legislation should include a requirement that the U.S. Executive Directors of these agencies urge the agency to consider international commodity markets and individual industrial sectors in making foreign loans and in engaging in foreign, financial, exchange or monetary transactions to minimize adverse impacts of government subsidization of production of international commodities.

b) Enact a procedure for congressional oversight of the U.S. membership in the IMF, including periodic Treasury reports of IMF lending policies. Such reports should be made to the President and the Congress in 90-day intervals listing all applications filed with the IMF and World Bank for assistance in establishing or enhancing capacity to produce mineral commodities for export if the commodity is in surplus on world markets.

Senator **Dole**. Again, I tend to agree with much of what you have said. And I have seen the erosion. In fact, we have tried to prevent some of it. However, I think in certain areas, such as the minimum tax, I don't see any need for change. It seems to me that if fairness is a consideration that we not only keep what we have but perhaps increase the minimum tax, or else find some better way to make certain that everybody gets to contribute to the economy by contributing revenue.

I have already heard some criticism of so-called "Republican" tax policy where fewer and fewer corporations pay any tax at all. You can argue that—whether they should or shouldn't.

But it's my view that we have to continue to take a look at all the tax policies. And we had better be rearranging our priorities.

There is no doubt in my mind that the energy industry has taken their lumps, whether it's the windfall profits tax or something else. Every time somebody thinks of some new tax, they look at some energy source, generally oil. They say, well, that's a big target. Let's just tax energy.

It seems to some of us that we have got to find some other source. We can't just keep going back to the same trough.

We appreciate your testimony. Your full statement will be made a part of the record.

Mr. **Bedell**. Thank you very much.

[Whereupon, at 10:37 a.m., the hearing was concluded.]

FUTURE OF U.S. BASIC INDUSTRIES

MONDAY, OCTOBER 3, 1983

U.S. SENATE,
SUBCOMMITTEE ON ECONOMIC GROWTH,
EMPLOYMENT, AND REVENUE SHARING,
COMMITTEE ON FINANCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:32 a.m., in room SD-215, Dirksen Senate Office Building, Hon. John Heinz (chairman) presiding.

Present: Senator Heinz.

Senator HEINZ. Today the Subcommittee on Economic Growth and Employment is going to hold the second of two hearings on the future of basic industries, and we hold today's hearing on the heels of the announcement of the proposed merger between the LTV Corp. and Republic Steel. To my mind that merger underscores the dramatic structural shifts taking place in the steel industry and suggests the kind of pressure on industries undergoing adjustment.

We are in the midst of a long-awaited economic recovery. It does not seem that this economic recovery strikes all industries and all regions at the same pace; and indeed there are some industries that would appear not to be benefiting in any significant way from that economic recovery, as evidenced by continuing layoffs, plant closings, and declining market shares. The short-term outlook for many of our basic industries still seems relatively dismal.

The merger that was announced at the end of last week perhaps signals that we need to look not only at the kinds of antitrust waivers that apparently have made this kind of a merger possible, but other kinds of easements to structural adjustment and stronger competitive opportunity for industries.

The focus of our hearings today will therefore be to continue where we left off at our last hearing, to determine what the trends in our basic industries are, and to analyze what specific policies might thus be pursued by Congress, by the administration, or both together, to assist our basic industries in finding a better way of adjusting to new market conditions.

We have a fairly substantial witness list this morning. I will ask our witnesses to try to observe the committee rules—the chairman will do likewise—and it is my privilege to welcome back Allan Mendelowitz, the Associate Director of the Trade, Energy, and Finance Group of the General Accounting Office.

Mr. Mendelowitz gave us the benefit of his testimony in Philadelphia about 2 months ago, where he discussed in some detail the interplay in Japan between industrial and government forces. Today he will be testifying on an unrelated but somewhat more specific subject, namely, Japanese industrial policy.

Allan, we welcome you back. Please proceed.

STATEMENT OF ALLAN MENDELOWITZ, ASSOCIATE DIRECTOR, TRADE, ENERGY AND FINANCE GROUP, NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION, GENERAL ACCOUNTING OFFICE, WASHINGTON, D.C.

Mr. **Mendelowitz**. Thank you very much, Mr. Chairman.

With your permission, I will read an abbreviated statement and submit the full statement for the record.

Senator **Heinz**. Without objection, your entire statement will be a part of the record.

Mr. **Mendelowitz**. And I am accompanied this morning by Peggy McGregor and Katherine Schinasi, who were the primary staff members doing the work on Japanese industrial policy.

We are pleased to be with you today to discuss our reports: "Industrial Policy: Japan's Flexible Approach" and "Industrial Policy: Case Studies in the Japanese Experience."

In an earlier hearing, as you indicated, we talked about the interaction of macro policies and industrial policy and about the use of industrial policy in Japan for growth industries. Today we will report on those industrial policies that assist declining industries.

Despite the apparent very strong performance of the Japanese economy over the past several decades, the Japanese economy is not without its difficulties: rising labor costs, sluggish world demand, lower priced products from competing countries in Southeast Asia, increased raw material costs, and foreign market import restrictions have all contributed to severe economic disruptions for some Japanese industries.

The Government has attempted to assist these declining industries to adjust to new circumstances through numerous mechanisms. The Government also assists workers in these industries through a number of unemployment and reemployment programs.

Government assistance toward declining industries has several basic objectives: To help industries adjust to short-term or cyclical disruptions, to help industries which need significant restructuring to regain their competitiveness and to help industry segments which have lost comparative advantage move into more competitive, higher value-added production.

The parameters of Government involvement in the adjustment process are outlined in the specific industries structural improvement temporary measures law enacted in July 1983 and in its predecessor, the structurally depressed industries law, enacted in 1978. The earlier law outlined several criteria under which industries could apply for designation as "depressed," and the basic elements of stabilization plans to reduce industry capacity. Depressed in the context of this legislation can apply to an industry suffering either a cyclical fall in demand or a secular decline.

The 1983 law is geared toward basic industries, primarily refiners and processors of intermediate products, hard hit by energy price increases, sluggish demand in the economy, and the rise of developing country competitors.

Under the 1978 law, 14 sectors were designated as structurally depressed, including shipbuilding, the synthetic fiber segment of the textile industry, aluminum refining, urea, and others. Basic materials industries which can be considered for the designation as depressed under provisions of the 1983 law can be divided into four general categories: first, those in secular decline due to the rising raw material and energy costs; second, those experiencing reduced demand due to energy conservation; third, those needing ongoing product development to respond to competition from newly industrializing countries; and fourth, those in cyclical downturns beause of depressed business conditions.

Under provisions of both laws, stabilization plans are developed through negotiations between the Government, industry, and labor. These plans may include commitments on the part of industry to scrap certain equipment, close down production facilities, install new, more modern equipment, and so on. The plans also include proposals for reduction in the work force, employee transfers, early retirement, retraining, and outplacement programs. The nature and form of Government assistance is also outlined in the stabilization plans. It should be noted that formulating consensus on the appropriate adjustment mechanisms through this negotiating process has become increasingly difficult.

The emphasis of Government assistance is on helping small- and medium-sized enterprises, on the premise that large firms have sufficient internal resources to reduce capacity and diversify, and have greater flexibility in shifting workers. The Government also has measures available under other laws to assist small- and medium-sized firms, depressed regions, and displaced workers.

Tools of Government assistance are essentially the same under both the 1978 and 1983 laws. The primary tools available to the Government are antitrust waivers for the creation of antirecession cartels for the purpose of reducing output capacity, financial assistance through Government loans and loan guarantees—for example, to facilitate scrapping of equipment—and tax incentives such as special depreciation.

Import restrictions are not prohibited; however, the laws state that trade protection to maintain or preserve uncompetitiveness should be avoided.

In addition to these tools, the Government has implemented a number of employment assistance programs to aid unemployed workers.

It is interesting to note that in the process of developing stabilization or adjustment plans there has been a great deal of conflict. In virtually all industries where some sort of restructuring has been necessary, the process has been marked by significant conflicts between Government and industry, firms within the industry, and in fact between Government agencies.

Despite a general constructive working relationship between these groups, consensus formation has been difficult.

I just might close by saying that the ultimate success of the Japanese Government's adjustment programs will lie in its ability to closely coordinate adjustment to decline with incentives to encourage shifts of resources into more competitive, promising activities.

In a slower growth environment, recognizing that emerging industries can ease adjustment problems of declining industries and coordinating programs to assist resource shifts from declining to emerging industries are key elements of Japan's positive adjustment policy.

This concludes my summary statement, and we will be happy to try to answer any questions you might have.

[The prepared statement of Allen Mendelowitz follows:]

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

FOR RELEASE ON DELIVERY
EXPECTED AT 9:30 a.m.
OCTOBER 3, 1983.

STATEMENT OF

ALLAN I. MENDELOWITZ
ASSOCIATE DIRECTOR, NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

BEFORE THE
SENATE COMMITTEE ON FINANCE

SUBCOMMITTEE ON ECONOMIC GROWTH, EMPLOYMENT
AND REVENUE SHARING

ON

JAPANESE INDUSTRIAL POLICY

Mr. Chairman and Members of the Subcommittee:

We are pleased to be with you today to discuss our reports, "Industrial Policy: Japan's Flexible Approach" (GAO/ID-82-32) and "Industrial Policy: Case Studies in the Japanese Experience" (GAO/ID-83-11). Our work focused on (1) exploring the contribution of macroeconomic policy to industrial growth, (2) determining those policies which support growing industries, and (3) determining those which assist declining industries.

We examined Japan's past and present experiences with industrial policy and reviewed the goals and tools of Japan's industrial policy to assess how and why they have changed over the postwar period. In addition, we discussed how macroeconomic monetary and fiscal policies have helped to achieve the goals of industrial policy.

From World War II through the early 1970s, the widely accepted consensus in Japan strongly supported government efforts to reconstruct the economy by rebuilding the nation's basic industries and by working to catch up with the technology of the United States and Western Europe. This was accomplished by using such tools as

--strict foreign exchange controls,

--commercial policies which gave incentives to exports and restricted imports, and

--controls over foreign investment and the acquisition of technology.

Monetary and fiscal policies reinforced the effectiveness of these tools in a number of ways, but primarily by

--keeping interest rates low, thereby lowering the cost of investment and generating demand for loanable funds that exceeded supply;

--placing strict controls over domestic capital markets, which effectively prevented these markets from becoming a major source of free market capital;

--administering a tax system which favored savings and investment; and

--channeling government-controlled resources into productive investment.

In the early postwar years, policy goals were primarily oriented toward rebuilding specific basic industries and an industrial infrastructure. By the mid-1960s, Japan had largely achieved its postwar development goals and began placing growing emphasis on technology and social development issues. Following the economic turbulence of the mid-1970s, Japan has focused on adjusting to stable growth, supporting resource conservation and environmental improvements, while continuing to support the development of new technology.

With these changes in the goals of industrial policy, tools to implement these goals also changed. Such changes are attributed to numerous factors, including

- --the financial success of Japanese firms which left them less dependent on debt financing;
- --the relaxation of domestic regulation of financial markets, which opened new avenues of financing to firms;
- --international pressure and obligations of Japan, such as those under the International Monetary Fund and the General Agreement of Tariffs and Trade;
- --increasing budget deficits, which placed constraints on the government's ability to finance industrial development; and
- --a rising class of structurally depressed industries.

Government influence over key industrial sectors began to weaken as a result of these factors.

INDUSTRIAL POLICY TOWARD GROWTH INDUSTRIES

To illustrate our discussion on the mechanics of industrial policy in growth industries, we studied computers, aircraft, and robotics. Segments of each of these industries meet criteria enumerated in the government's overall economic goals, that is, they embody high value added or contribute to productivity or quality improvements in the Japanese economy or society as a whole. Industrial policy for these industries is implemented within a framework of temporary laws which promote electronics and machinery industries. These laws have allowed the Ministry of International Trade and Industry (MITI) to permit certain activities under exemptions from Japan's anti-monopoly law. A loosely constructed framework composed of numerous government and industry groups provides coordination for policy development and implementation.

A significant aspect of Japan's industrial policy toward emerging industries lies in government support for the development of leading-edge technologies as well as support for the diffusion of advanced technology throughout the economy. The industries receiving support, therefore, are important not only in and of themselves but also for improving the performance and productivity of the economy as a whole. Direct subsidies to joint industry-government research and development projects and tax credits for research and development help to provide the resources to develop new technology. Recognizing that the contribution of new technology depends on how quickly and widely it spreads throughout the economy, the Japanese Government has also used preferential tax treatment, credit, and government supported leasing companies to encourage the diffusion of new technology.

INDUSTRIAL POLICY TOWARD DECLINING INDUSTRIES

Rising labor costs, sluggish world demand, lower priced products from Southeast Asia, increased raw materials costs, and foreign market import restrictions have all contributed to severe economic disruptions for some Japanese industries. The government has attempted to assist these declining industries to adjust to new circumstances through numerous mechanisms. The government also assists workers in these industries through a number of unemployment and reemployment programs.

Government assistance toward declining industries has several basic objectives:

--to help industries adjust to short-term or cyclical disruptions;

--to help industries which need significant restructuring to regain their competitiveness; and

--to help industry segments which have lost comparative advantage move into more competitive, higher value-added production.

The parameters of government involvement in the adjustment process are outlined in the Specific Industries Structural Improvement Temporary Measures Law enacted in July 1983 and in its predecessor, the Structurally Depressed Industries Law, enacted in 1978. The earlier law outlined general criteria under which industries could apply for designation as depressed and basic elements of stabilization plans to reduce industry capacity. "Depressed" in the context of this legislation can apply to an industry suffering from either a cyclical fall in demand or secular decline. The 1983 law is geared toward basic industries, primarily refiners and processors of intermediate products, hard hit by energy price increases, sluggish demand in the economy, and the rise of developing country competitors.

Under the 1978 law, 14 sectors were designated as stucturally depressed, including shipbuilding, the synthetic fiber segment of the textile industry, aluminum refining, and urea, among others. Basic materials industries which can be considered for designation as depressed under provisions of the 1983 law can be divided into four general categories.

1. Those in secular decline due to rising raw material and energy costs.
2. Those experiencing reduced demand due to energy conservation.
3. Those needing on-going product development to respond to competition from newly industrializing countries, And,
4. Those in cyclical downturns because of depressed business conditions.

A number of industries or industry segments have been designated for assistance under this new law, including aluminum smelting, petrochemicals, chemical fertilizers (urea, ammonium, and phosphoric acid), electric furnace steel, synthetic textile fibers, ferroalloys (ferrosilicon), paper and paperboard, and polyvinyl chloride, among others. The shipbuilding industry, included in the 1978 law, is not covered by the 1983 law.

Under provisions of both laws, stabilization plans are developed through negotiations between the government, industry and labor. These plans may include commitments on the part of industry to scrap certain equipment, close down production facilities, install new, more modern equipment, and so on. The plans also include proposals for reductions in work force, employee transfers, early retirement, retraining and outplacement programs. The nature and form of government assistance is also outlined in the stabilization plans. Formulating consensus on the appropriate adjustment mechanisms through this negotiating process has become increasingly difficult.

The emphasis of government assistance is on helping small and medium-sized enterprises to adjust on the premise that large firms have sufficient internal resources to reduce capacity and diversify and greater flexibility in shifting workers. The government also has measures available under other laws to assist small and medium-sized firms, depressed regions, and displaced workers.

SPECIFIC TOOLS OF GOVERNMENT ASSISTANCE

Tools of government assistance are essentially the same under both the 1978 and 1983 laws. The primary tools available to the government are anti-trust waivers, financial assistance through government loans and loan guarantees, and tax incentives. Import restrictions are not prohibited, however, the laws state that trade protection to maintain or preserve uncompetitiveness should be avoided. In addition to these tools, the government has implemented a number of employment assistance programs to aid unemployed workers.

Anti-trust waivers

The use of cartels is a primary tool available to the government in helping industry adjust. The depressed industries laws grant a specific waiver from Japan's anti-monopoly law for the creation of anti-recession cartels for the purpose of reducing industry output. Cartels are also used to reduce production capacity in response to long run secular decline.

For the most part, anti-recession cartels are used to address short-term price and production disruptions. MITI may authorize the creation of a cartel to reduce industry output in response to any number of competitive factors which may be injuring an industry. The key feature of these cartels is that they are approved only for specified time periods, and for output reduction.

MITI can also authorize other forms of joint activities, with the concurrence of Japan's Fair Trade Commission (JFTC). In many industries designated under the 1983 depressed industries law, (e.g.-ethylene, urea, phosphoric acid, etc.) MITI is proposing that firms engage in joint production, marketing, sales, and investment activities. MITI proposes joint activities of this nature with the aim of restructuring and revitalizing the industry concerned. Such cartel activities, developed in the context of industry stabilization plans, are permitted for limited and clearly specified time periods. However, these activities can result in permanent changes in the structure of these industries.

Financial assistance

Financial assistance in the form of loan guarantees and preferential financing has been used by the government to assist structural adjustment. Under provisions of the Structurally Depressed Industries Law, the government established the Depressed Industries Credit Fund. The primary contribution to this fund (80 percent) came from the Japan Development Bank, with the remainder coming from private financial institutions. Loan guarantees have been provided from this fund to the shipbuilding and aluminum industries. By far the largest proportion of this fund, roughly 62 percent, was designated for shipbuilders. Additionally, a Shipbuilding Stabilization Association, created to oversee capacity cutbacks, purchased nine shipyards with loans from the Japan Development Bank and commercial banks and with capital raised from the government and private sector. In the case of the textile industry, the government has provided low-interest loans to encourage equipment modernization and in one instance paid outright for equipment to be scrapped.

Tax incentives

Tax incentives are also available to assist in the adjustment process. For the textile mills, tax incentives were provided to encourage equipment modernization. Although not under the auspices of the depressed industries laws, Japan also provides tax incentives to industries to locate or relocate in depressed areas to help ameliorate the effects of industrial decline.

Trade protection

It has been the stated policy of the Japanese Government to avoid the use of trade restrictions in the formulation and implementation of restructuring and revitalization plans for depressed industries. This precept is specified in both the 1978 and 1983 depressed industries laws. MITI believes that by not implementing restrictive trade measures, it is able to constantly "remind" the industry that adjustment is necessary and thereby gain quicker industry acceptance of stabilization plans.

However, MITI has not always followed through with this principle. For the aluminum refining industry, designated under both the 1978 and 1983 laws, MITI imposed a combined tariff and quota system for the importation of alumina. It is also our understanding that although no formal trade restrictions were imposed on the import of chemical fertilizers, MITI has attempted to restrict such imports through administrative guidance.

Japan defends its depressed industries law as representing a positive adjustment policy in accord with Organization for Economic Cooperation and Development standards which state that aid to declining industries should be limited in time and be directed at eliminating uncompetitive operations, and retaining only those parts of an industry which can be viable over the long term.

Stabilization plans: conflict or cooperation

Inherent in the process of developing stabilization or adjustment plans is a great deal of conflict. In virtually all industries where some sort of restructuring has been necessary, the process has been marked by significant conflict between government and industry, firms within the industry, and in fact, between government agencies. Despite a generally constructive working relationship between these groups, consensus-formation has been difficult.

There was severe conflict in the shipbuilding industry, for example, between government and industry concerning the extent of capacity reductions and among large, small and medium-sized firms concerning which would bear the most significant costs associated with these reductions. Similar conflicts existed in the aluminum industry and delayed the conclusion of a plan for several years. Moreover, JFTC and MITI have at numerous times disagreed on the activities which would be permitted in cartels formed under the law. Finally, political and social constraints have caused the government to take actions it thought economically unwise, such as assisting a shipbuilder which had relatively little hope of regaining its competitive position.

Employment policies

Labor adjustments in Japan have been relatively smooth in large multiproduct firms, while small and medium-sized companies have experienced a more protracted and often acrimonious process. Our review of the shipbuilding industry, which is comprised of small, medium, and large firms, reflects this pattern. Patterns of adjustment in large firms are characterized by (1) heavy reliance on inter- and intra-firm transfers, (2) labor reductions through attrition, (3) cost reductions through cuts in working hours, bonuses, and wages, and (4) diversification of business activities. Because of their ability to transfer workers, large firms also make widespread use of retraining. In smaller firms, adjustment measures are more likely to include lay-offs of part-time employees, solicited early retirements and outright dismissals.

The government has created a series of measures, designed to assist unemployed workers and to smooth structural adjustments, which concentrate on employment stabilization and retraining. The unemployment insurance system, financed by employer and employee contributions, contains an employment adjustment subsidy which has been used since 1975 as a short-term measure to maintain employment in depressed industries. Firms certified as eligible by the Ministry of Labor receive reimbursement for one-half to two-thirds of a worker's wage. Receipt of these funds is contingent on preparation and implementation of detailed adjustment plans. Local employment offices receive and approve the plans.

In conjunction with the passage of the Structurally Depressed Industries Law, two employment measures were enacted, one for unemployed workers in depressed industries and one for workers in depressed areas. These measures, together with a third one aimed at small and medium-sized firms, provide various unemployment benefits, subsidies, assistance for retraining and job searches, and provisions for employment in public works programs for eligible workers. Since the late 1970s, public employment policies have placed increasing importance on providing employment opportunities for older workers.

Under the above provisions, between 1975 and 1979 a total of $730.7 million was allocated by the government to 1.3 million displaced workers and roughly 700,000 establishments. Government assistance appears to have been relatively more important in smaller firms, while the potential for shifting labor within the firm and extensive cooperation between labor and management in agreeing to formal adjustment plans have been significant in larger firms.

OBSERVATIONS

In the decade since the first oil crisis, Japan has experienced industrial problems, slower economic growth, and increased exposure to international trade and competition. In an era of slower overall growth, adjustment to decline in specific industries is difficult to achieve, creating severe economic and political pressures on the government.

The Japanese Government has developed a coordinated approach to problems of adjustment of declining industries. The focus of government assistance has been on small and medium sized firms, because large firms typically are expected to adjust more readily on their own. However, attempts are made to include all firms in an industry in negotiating an adjustment plan. Within the framework of the structurally depressed industries laws, industry and labor agree to stabilization and/or restructuring plans in return for government assistance in the adjustment process. The significance of such programs lies in industry and labor recognizing the need to restructure and being willing to do so, as evidenced by acceptance of stabilization plans. By attempting to avoid the use of import restrictions the government forces industries to recognize the need for positive adjustment. The information provided in the context of this process makes possible better analysis of the causes and effects of the problems faced by a particular industry and helps determine the most effective mechanism for adjustment--scrapping, mothballing, and/or modernization programs. The Japanese process, therefore, is one in which responsibility for industrial restructuring and employment adjustment is shared by industry and labor, with the government providing the incentive and funds where necessary.

The adjustment process in Japan is not always a smooth or easy one as evidenced by the difficulties encountered in formulating consensus concerning the development and implementation of stabilization plans. Moreover, political considerations can hamper or override what would otherwise be economically rational decisions on the part of the government.

The ultimate success of the Japanese Government's adjustment programs will lie in its ability to closely coordinate adjustment to decline with incentives to encourage shifts of resources into more competitive, promising activities. Tax incentives to encourage new industries to locate in depressed regions and programs of the Japan Development Bank to develop infrastructure and provide funding to attract industries to these areas are all steps in this direction. In a slower growth environment, recognizing that emerging industries can ease adjustment problems of declining industries and coordinating programs to assist resource shifts from declining to emerging industries are key elements of Japan's positive adjustment policy.

Senator **Heinz**. Mr. Mendelowitz, I note that among other things the Japanese Government's efforts to aid in structural readjustment seem to be targeted more at medium-sized and small firms. Their feeling about the large firms is that they are big enough to take care of themselves. On page 13 of your statement you indicate that between 1975 and 1979 the Government aided displaced workers totalling 1.3 million and roughly 700,000 establishments. That is an absolutely remarkable number of establishments. Is that a typographical error, or is that correct?

Mr. **Mendelowitz**. That figure should be 70,000.

Senator **Heinz**. If the number of employees correspond in any way to the number of establishments, that would suggest there are two people employed in each of the firms. [Laughter.]

Mr. **Mendelowitz**. The number includes a whole range of contractors, subcontractors which are very small establishments. But obviously your observation is correct.

Senator **Heinz**. Now, you mentioned a number of measures—antitrust waivers, which include research and development, something recently proposed by the Reagan administration; and mergers and acquisitions—we have such an interpretation available to the Justice Department which is used in appropriate circumstances. I gather that the LTL/Republic merger will be under the so-called failing industry interpretation of the antitrust laws that has by precedent been used. You mentioned joint production as another use of the antitrust waiver. Are there any other uses of antitrust waivers under the Japanese Depressed Industry Statute or Statutes?

Mr. **Mendelowitz**. The primary use of antitrust waivers, and the antitrust waiver that MITI has essentially exclusive authority to use, is the antirecession cartel which permits firms in the designated industry to come together for the purpose of reducing production, if it's a cyclical downturn, or scrapping capacity if it is viewed as a secular decline.

However, with the approval of the Japan Fair Trade Commission, there are a whole range of additional waivers for additional activities which are permitted. These include activities such as joint purchasing of raw materials, setting up joint production facilities, joint sales efforts, virtually a whole range of activities that we would consider to be essentially anticompetitive.

These types of activities are permitted and promoted by the Japanese Government when the objective of the stabilization plan is the fundamental restructuring of an industry, such as a reduction in the number of firms and an exodus from the industry of inefficient producers.

Senator **Heinz**. Our antitrust laws would, with the possible exception of mergers, not permit that. Is that not correct?

Mr. **Mendelowitz**. I am not an antitrust expert, but obviously my impression is that most of these activities would not be permitted under the U.S. antitrust laws.

Senator **Heinz**. One of the mechanisms the Japanese use to come to an agreement about what an industry will do to adjust is that labor, management, and the Government get together and decide what everybody is going to bring to the poker table and how much everybody is going to put into the pot. Do they need an antitrust exemption to do that? Do they have to, in a sense, claim that they are doing this while they are doing it under an antitrust exemption? In this country you would.

Mr. MENDELOWITZ. My understanding is that when an industry is in the process of being designated as a distressed industry and various factions are coming together for discussion purposes to establish a stabilization plan, to the best of our knowledge they do not need antitrust waivers.

Senator HEINZ. Now, you also mentioned that the process of seeking consensus in an industry seems to be becoming more contentious, if I understand your testimony correctly, more difficult to achieve a consensus. Why is that? Was it easy to achieve a consensus at one time, and are there certain forces making it more difficult? Or is there something else happening?

Mr. MENDELOWITZ. I think that much of the consensus building that we are aware of in Japan has been on the growth side. And I think it is fairly easy to reach agreement on what should be done and who should do it when the pie is growing and everyone is getting a larger slice of a larger pie.

When structurally depressed industries became an issue, the Japanese were faced with what becomes a considerably less pleasant undertaking, that is cutting back production, cutting back employment, and reducing capacity.

It then became a question of deciding who would reduce what capacity, who would let what workers go, who would share or who would shoulder the financial burden of these adjustments. And obviously those are difficult issues to resolve, and the process of coming up with a consensus has been quite difficult.

In the shipbuilding industry, for example, the cutbacks in capacity that took place in the 1970's took place unevenly across firm sizes. The largest firms were expected to cut back capacity something on the order of 40 percent; the medium-sized firms I believe 30 percent; the smallest firms only 15 to 25 percent. So the large firms were unhappy because they felt they were shouldering an unfair and disproportionate share of the cutbacks.

When it came to financing the scrapping of capacity in the shipbuilding industry, some form of Government assistance was available to the small- and medium-sized firms, but the large firms were in turn expected to shoulder some of the repayment burden associated with Government assistance. So the large firms were unhappy because they saw small and medium firms receiving the benefit of Goverment financial assistance, and they saw themselves as bearing the cost of that assistance.

Senator HEINZ. How were they expected to make repayments?

Mr. MENDELOWITZ. The process of scrapping, if I remember correctly, and Ms. McGregor or Ms. Schinasi may want to add some of the details, involved the creation of a special corporation for the purpose of buying up and scrapping excess capacity, and selling off the land. This special corporation received some loans from the Government. It was expected that the funds advanced would be paid off over a period of I think 10 years.

Some of the moneys to repay the loans came from a special surcharge placed upon all new ship orders; some of the funds would come from the selling of the scrapped equipment and land associated with the excess capacity.

If at the end of the 10-year period there were still some loans outstanding, all companies, including the larger companies, were expected to make good on those loans.

Senator **Heinz**. All of the initiatives that are permitted, or for that matter encouraged, under the Japanese depressed-industry statutes are time limited, and I gather there is a statement by the OECD which enumerates standards which can be followed. Could you supply that for the record for us, the statement of OECD standards?

Mr. **Mendelowitz**. Yes, we would be happy to.

[The statement of OECD standards follows:]

OECD WORKING GROUP ON

POSITIVE ADJUSTMENT POLICIES:

SUMMARY AND CONCLUSIONS

1. Economic performance in OECD countries in the 1970s fell far short of what now appears to have been the "golden age of stability and growth" of the 1950s and 1960s. Economic growth decelerated, inflation of consumer prices in the OECD area rose sharply and is still around 10 per cent, and unemployment reached 7½ per cent by the beginning of 1982. It is quite obvious that these developments are not just the consequence of another downturn in the business cycle of overall demand, but that more lasting changes have occurred on the supply side, setting new conditions for production and employment.

2. The most visible and important factor that brought about a break in the underlying long-term trends was the oil price shock of 1973 and the inflationary recession thereafter. From 1956 to 1970, energy costs fell in the developed countries by 10 to 20 per cent relative to manufactures and by 50 per cent relative to average wages. The more than tenfold increase in oil prices between 1973 and 1980 added substantially to inflation, depressed demand, and rendered a part of the existing capital stock obsolescent. The combination of high inflation and low growth created a situation in which investors lost confidence, as they could no longer rely on any kind of extrapolation of underlying trends to make long-term investment decisions.

3. However, it is difficult to believe that the oil shock of 1973, the wage-price spiral thereafter and the subsequent energy price increase in 1979 can entirely explain the persistence of poor overall economic performance. Even if other factors bringing about structural adjustment pressures such as shifts in demand, changes in the size and composition of the labour force, introduction of new technologies, more stringent environment standards and new patterns in international trade and capital flows are also taken into account, it appears that a well functioning market economy should normally be able to cope with such challenges.

4. The presumption is, therefore, that it is not only the adjustment requirements which have been too great or which came too abruptly, but also a diminished capacity and/or willingness of the economy and society in the industrialised countries to respond positively to them, which makes present economic difficulties so troublesome to resolve. Socio-economic rigidities, which may further endanger the adaptability of industrialised countries in the 1980s, include particular features of labour and capital markets, increasing direct and indirect government involvement in the economy, rigidifying effects of lumpy, capital-intensive technology, large-scale investments, and also some revival of protectionism in international trade.

5. In general, these inflexibilities in the economy and society seem to have four basic origins. First, they reflect attitudes and institutional developments which evolved during the period of uninterrupted high levels of employment, and which were slow to

change under the entirely different circumstances of the 1970s. Second, they reflect the rapid growth of the public sector and of social programmes and regulations which, however desirable in themselves, have sometimes had unintended adverse side effects on incentives to work, save and invest. Third, they derive from attempts by governments to alleviate the social consequences of structural change by preserving given production and employment structures. Fourth, and most importantly, slow growth itself makes structural adjustment more difficult.

6. In an expanding economy, structural change is brought about with less frictional losses as the process of adaptation is manifested by differential growth rates, whereas a stagnant economy necessitates absolute contraction of certain activities. Profits also tend to be higher and more widespread in a fast growing economy, which in turn induces investment, risk taking and innovation in yet unexplored areas. Finally, higher growth tends to contribute to higher employment, which is conducive to more voluntary labour mobility and skill acquisition financed by firms which have labour shortages.

The Need for Positive Adjustment

7. Given the importance of this interrelationship between economic growth and structural adjustment, it is obvious that, to re-establish sustained non-inflationary growth, appropriate demand management needs to be supplemented by effective supply-side policies. Governments therefore need to pursue conscious policies for positive adjustment, enhancing the flexibility and resilience of markets in the face of change. Governments should also take account of the essential functioning of the market system when they implement welfare, environmental and other social policies. It was with such concepts and concerns in mind that the OECD Council at Ministerial Level approved in June 1978 "Some General Orientations for a Progressive Shift to More Positive Adjustment Policies", outlining how governments could avoid retarding and help in promoting adjustments to lasting changes in the broad pattern of demand and supply. The "General Orientations" - as well as this Report - are based on the presumption that a competitive market economy is normally the best mechanism to marshall responses to social, economic and technological change flexibly, constructively and without excessive cost.

8. The competitive system is a mechanism to convey complex information about social preferences and technological possibilities to economic agents in factor and product markets through the indirect means of profits and losses. When this system works, it confronts producers and consumers with information not only about present, but also about future conditions and induces people to make timely adjustments in production and demand structures. Nevertheless, it has to be recognised that, in practice, there are several reasons why markets may fail to fulfil their social functions satisfactorily. In this context, governments have an important role to play not only in contributing to an adequate political and social environment and in providing the ground rules for market operation, but also in intervening in the economic process, whenever it can be ensured that government intervention can make a positive contribution.

9. Indeed, markets neither automatically ensure full employment and price stability, nor guarantee harmonious regional development. Markets are also unlikely to anticipate future social and economic needs correctly in some areas of economic activity because the relevant information is not easily accessible. People usually also have uneven starting opportunities. In addition, there are economic activities for which the rewards for fulfilling needs cannot be easily appropriated by the supplier (public goods and external benefits). Other activities generate external costs. Some markets may be distorted by concentrations of market power, which can then reduce or eliminate proper adjustment, cost cutting and innovation. Where such conditions lead to market failures, a frequently difficult policy choice has to be made between government actions to remedy market failure and policies that remove the cause for failure and enhance the functioning of the competitive system.

Macro-Economic Stability Assists Micro-Economic Flexibility

10. Markets can best adjust positively to continuous changes in demand, in the supply of inputs and in production technology, if market participants can plan and operate in a context of stable and predictable political and social conditons. In a framework of well-established political ground rules and of steady social trends, individual investors and workers can more easily develop and preserve a medium- to long-term outlook which induces them to incur the typically short-term costs of structural adjustment for the sake of typically long-term gains. Like capital formation, structural adjustment is likely to fall short of its socially desirable objectives if the time horizons of those who make economic decisions are short and if there are erratic breaks in the underlying trends that affect individual decision-making.

11. This is particularly true of macro-economic stability. Price stability, high employment, steady expansion of demand and external equilibrium favour the spontaneous responsiveness of markets to change. On the other hand, markets easily fail to fulfil their social role adequately if macro-economic disturbances overshadow market signals and create risks for investment, change and innovation. It is equally true that an economy with mobile labour and capital and with flexible responses to changes in demand, technology or prices can be kept more easily on a macro-economic equilibrium path. In short, there is either a virtuous circle of micro-economic flexibility and macro-economic stability, or a vicious circle of rigidity and instability.

12. Inflation makes it difficult for market participants to interpret the signal of an individual price change: the individual producer or consumer does not - at least not quickly enough - know whether an observed price change reflects a new scarcity, a demand change or a new opportunity to which he should respond, or whether it only reflects yet another round of general inflation. In other words, inflation introduces "background noise" that may drown out market signals. At least, inflation slows down comprehension of and response to price signals, for it introduces an additional element of often unpredictable change into prices, costs and profits. By increasing the normal and inevitable risks of operating a business, inflation also reduces the capacity and willingness of the market operators to invest, restructure and innovate. As a consequence, adjustment to new conditions slows down.

13. While it is true that the threat of job losses tends to produce changes in working practices which are in line with labour mobility and positive adjustment, it has also to be recognised that high unemployment reduces the voluntary acceptance of labour mobility and responsiveness to change. Those set free by structural change are then more likely to be pushed into a pool of unemployed. In these circumstances, even people with jobs feel less secure and the public in general puts up resistance against policies that favour change.

14. A further important precondition for a properly and constructively functioning market system is a reasonably stable international environment and the confidence of market participants that an open multilateral system of trade and payments will be maintained. Major changes in the general international climate, actual or potential imposition of new trade barriers, interventions in international flows of capital, technology and enterprise and major instabilities of exchange rates are bound to have effects on the efficiency of markets and the readiness of firms to expand and innovate, which go far beyond the markets in which government intervenes. If entrepreneurs expect the general movement of policy to be in the direction of more impediments to international trade and payments, they will begin to perceive new business risks, with adverse effects on investment and job creation in areas that are dependent on world markets.

15. Finally, the long-term complementarity between overall economic performance and flexibility of economic structures raises difficult problems for the implementation of macro-economic policies. On the one hand, these policies can help to dampen disturbances originating in the domestic economy or coming from abroad. On the other hand, too frequent changes in macro-economic strategy can in themselves be a source of uncertainty and disturbance. This is why there have been calls for providing a more stable and predictable medium-term framework for macro-economic policies. While this is clearly desirable, its realization in what has become a more uncertain world economic environment is bound to involve difficult judgements between the conflicting requirements of predictability and flexibility.

Success in Macro-Economic Management Requires Micro-Economic Flexibility

16. Economic theory and practical experience suggest that macro-economic performance would not have deteriorated as much, had production factors been more mobile, had economic structures been more flexible and had producers been more willing to take risks. Where there is a lack of micro-economic flexibility, fiscal and monetary management is frequently only successful in attaining its stabilization objectives after long delays and through the indirect means of first creating substantial unemployment of labour and other resources. It is revealing that increases in aggregate demand in the 1970s tended to lead to less private investment than expected, that productivity gains were smaller than in previous decades and that inflation accelerated faster

and by more than was anticipated. In the light of recent experience, it is also apparent that the possibility of using non-accommodating money supply policies to stabilize the price-level depends crucially on flexibility and mobility in factor and product markets.

17. A further crucial concern is income distribution and wage formation. Taking into account growth prospects, capital costs and profit levels, a greater flexibility of wages (including non-wage labour costs) could greatly contribute to an improved responsiveness of aggregate employment to given increases in economic activity, and to the full utilisation and optimal allocation of the labour force and of resources in general. As this would require responsible, forward-looking collective bargaining, governments have an important role to play in creating an environment conducive to a better understanding of the need for greater consistency between real wage trends and macro-economic and structural policy objectives.

18. Improved health, education, and economic and social infrastructure can contribute to the productivity and flexibility of the economy. At the same time, however, the rise in the share of government spending in gross national expenditure involves the risk that an ever smaller share of the national product is allocated by decentralised decision under market conditions, and that an ever increasing share is allocated by centralised administrative procedure. Beyond certain limits, which may well have been passed in many OECD countries in the 1970s, the rise in public expenditure and the associated increase in tax burdens directly affect the ability of economies to adjust positively. It may therefore be important that governments reconsider their tax systems to remove unnecessary disincentives and rigidifying effects. On the other hand, there may be some scope for reforming administrative procedures to increase the efficiency and adaptability of the public sector. Also, the dividing line between public and private activity needs constant re-examination.

Positive Adjustment Requires Consistent Macro- and Micro-Economic Policies

19. If governments are faced with different combinations of high unemployment, unduly high labour costs, an over-valued exchange rate or unusually high interest rates, they are strongly tempted to use micro-economic policies to reduce the pressure of adjustment on sectors or firms. In most cases, however, such efforts are likely to prove counter-productive over the longer run. Trade restrictions add to inflation and reduce the potential for productivity gains. Interest rate or wage subsidies distort the allocation of resources. Direct subsidies to hard hit industries and companies divert resources from industries and companies with a greater potential for growth and employment-creation.

20. There is little point in governments pursuing non-accommodating demand management to reduce inflation if they at the same time increasingly engage in micro-economic policies that maintain the status quo, i.e. if they undermine the market forces on which the macro-economic policy makers rely to restore

the conditions for non-inflationary growth. This may indeed have been one important reason why non-accommodating macro policies have been so slow in achieving their desired results during the latter part of the 1970s.

21. Well established political ground rules, steadiness of social trends and reasonably stable macro-economic conditions greatly contribute to positive adjustment. Whilst there is room for differences in the style of socio-economic policy, micro-economic interventions, too, have to follow a systematic, forward-looking and consistent strategy which assists markets to fulfil their social objectives. In the face of an inevitably changing political, social, economic and technological environment, the implementation of more stable and medium-term oriented micro-economic policies is also bound to involve difficult judgements between the conflicting requirements of predictability and flexibility.

Promoting a Climate of Competitiveness

22. In properly functioning markets, changes in demand, in the availability of inputs and in technical knowhow are translated into price signals to which enterprises respond by adjusting their levels of output, production methods, levels of capacity and organisational form. Economic rivalry in the market place not only leads to responses to change but also generates change by product and process innovation, keeping alive a dynamic process which serves social and economic welfare in the face of changing circumstances. In many instances, markets are of course subject to inherent imperfections which restrict or distort the process of adjustment. It is the role of government to provide a framework of rules that maintains competitive markets and ensures that market participants obtain adequate information and are protected against unfair practices.

23. Competition policy need not be excessively concerned with structural criteria - such as concentration ratios - if overall economic policy ensures the international competitiveness of domestic industries. If the relevant market is the world market, nationally dominant firms and national mergers can be treated differently than in the case in which a firm has the unchallenged monopoly power in the home market. Competition policy in open economies can, therefore, pay much greater attention to long-term cost efficiency based on dynamic performance, economies of scale and learning effects in the production of large series. What matters for long-term economic growth are adjustments in production and employment structures to the introduction of new capital, new management and new technology into industry, and the contribution that competition policy can make to these changes.

24. From a positive adjustment point of view, cartels are much more problematic than dominant firms and mergers, as they tend to entail all the disadvantages of large firm size. Cartel agreements restrict the flow of resources from inefficient to efficient firms, because cartels protect high-cost firms. Cartels also tend to discourage the introduction of innovative processes and products for fear of upsetting the often delicate stability of cartel

agreements. It is therefore difficult to ensure that such arrangements provide an efficient solution to the basic problem of excess capacity. Indeed, if governments tolerate cartels, they are frequently induced to protect these national producers from international competition.

25. In areas where market competition is not feasible - as, for example, in the field of "natural monopolies" (like railways or electricity distribution or certain areas of telecommunications) - it is essential that governments encourage competitive market behaviour. This requires in particular that natural monopolies are made fully accountable for the costs of capital and other resources which they absorb, and that they are exposed to pressures for innovation and cost-cutting. This also requires a realisation that rules for such activities may become outdated and that new technologies frequently remove monopoly conditions. Society is best served if governments favour elements of open competition at the national and international level as much as possible. This also holds true for government procurement policies.

Regulations Should be Properly Targeted, Cost-effective and Subject to Regular Review

26. The governments of all industrialised countries have adopted certain laws and regulations that are aimed at establishing minimum performance standards and basic rules for fair and efficient competition. The effects of regulation on positive adjustment depend substantially upon the specific type of the regulatory measure. In the case of regulations requiring the provision of information to potential customers, the effect is unambiguously pro-competitive. Where regulation is in the form of restrictions on the entry of enterprises and individuals into particular industries and professions, there is a strong likelihood of conflict with the aims of positive adjustment, because they may unintentionally safeguard the market power of existing suppliers. Other serious side effects of regulatory policies on long-term efficiency are related to uncertainties in their implementation, to additional unnecessary costs and to the rigidities they may impose on industry structure and the conduct of enterprises. Given these potential negative side effects of regulatory activity, it is advisable that such policies should be subject to continual review.

27. In the field of environmental and other policies to reconcile private and social costs, the basic policy issue in the context of positive adjustment is not the justification of interventions, but the design of efficient policy instruments and their implementation. Since traditional administrative approaches may create unnecessary costs and rigidities, it appears expedient, wherever possible, to introduce measures which operate through market incentives to achieve given environmental goals. The major benefit of such a market-conforming approach is that it does not place restrictions on firms' decisions about location, production techniques, product mix and choice of inputs, whereas less flexible direct controls tend to create barriers to structural adjustment.

Information About Long-Term Structural Changes May Assist Adjustment

28. The governments of some Member countries have tried to overcome the uncertainties of long-term structural change by providing projections of industrial structures based on an evaluation of their country's long-run comparative advantages, or by co-operating with industry and unions to prepare such projections. Such studies can, in the opinion of these governments, serve various purposes: they may alert the public to the inevitability of continuing structural changes which can only be resisted at considerable cost to growth and employment, even if the specific data are taken to be more illustrative of trends and not as precise forecasts. In addition, projections, particularly to the extent that they explore various alternatives, can greatly contribute to drawing the attention of private and public decision makers to the important future issues. Beyond this, it may also be argued that the provision of coherent, long-term information can make a helpful contribution to the functioning of markets, if it helps market participants to reflect more critically on their long-term expectations.

29. Other Member governments do not undertake such projections. They consider that governments - like market participants - have only a limited capacity to collect and process the very large masses of data about complex political, social, economic, industrial and technological developments that are needed to make proper structural projections for the economy as a whole. There is also the danger of concerted and cumulative error and of advance co-ordination of proposed structural changes limiting the scope for private economic experimentation and initiative. This would undermine the competitive orientation of market participants. These dangers weigh even more heavily where the provision of projections on future industrial structures is coupled with direct public guidance. Decentralised decision making and the trial-and-error methdds of the market place have the great advantage of diversifying the search process for what is new and socially useful.

30. However, market participants may find that such projections reduce the uncertainties which limit their capacity to react to policy changes, if the policy-making authorities use medium- and long-term projections as instruments by which to explain likely policy responses to evolving structural conditions.

Government Policies to Assist Structurally Weak Industries Should be Subject to Strict Criteria

31. The rise and decline of specific activities is a normal feature of economic development and is as such not a reason for government intervention. However, there may be two exceptional cases when temporary government assistance can be justified. When an industry is in rather rapid decline, and there is only little hope that this industry will survive, it may be socially less costly to grant temporary subsidies. Such a measure may reduce the rate of worker lay-off and facilitate the shift of labour to more promising activities. The other exception is to provide temporary support to investment in new process and product technology or in capital equipment needed to rejuvenate the industry. This would be in line with positive adjustment and long-term growth, but this rests of course on the assumption that the industry can indeed become genuinely competitive in international markets.

32. In any event, it must be ensured that assistance definitely contributes to adjustment and is not considered as a source of rent - neither by entrepreneurs as a source of windfall profits, nor by workers as an opportunity for trying to appropriate part of the subsidy in the form of higher wages. It is therefore indispensable that government assistance be made subject to certain conditions and criteria. Most importantly, action should be temporary, coupled with explicit conditions for effective remedial actions and, wherever possible, reduced progressively according to a predetermined timetable. This will require entrepreneurs and workers to take initiatives to improve the situation and not to defer the problem. It may also contribute to ensure closer co-operation between management and labour and prevent aggressive labour tactics which could further undermine the viability of the industry.

33. Another principle of assistance to structurally weak industries from the viewpoint of positive adjustment is to give preference to such forms of support that allow, to the greatest extent possible, the continued play of market forces. Therefore direct financial aid should, where necessary, be given preferably to industries on the basis of general restructuring criteria to avoid situations where aid is simply a reward for ailing firms and inefficient producers. To maintain the rigorous scrutiny of capital markets, it is also useful to stipulate that private risk capital participate in assisted projects. Finally, the effects and costs of any assistance should be made as evident as possible to policy makers as well as to the public at large.

Creating a Climate Favourable to Innovation is Conducive to Economic Growth and Positive Adjustment

34. Innovation is crucial for future growth and positive adjustment, and there is no doubt that governments have an important role to play in promoting creative investment and new technological developments. In a competitive market economy, this means above all providing a general climate favourable to skill acquisition, formation and turnover of capital, risk taking, and innovation. To the extent that new technologies are developed by firms and entrepreneurs whose actions are affected by numerous complex factors, governments must pursue policies conducive to innovation over a wide range of areas, including macro-economic, capital market and regulatory policies, and not only policies specifically aimed at technological progress. In addition, the general climate for innovation benefits considerably from indirect measures, such as support for long-range fundamental research by university and scientific laboratories and programmes to disseminate new non-proprietary scientific and technical knowledge.

35. Furthermore, there is the argument that more specific aids to promising new industrial activities are warranted: first, because capital markets may fail to develop sufficiently long-run visions for the long-term good of society; second, because there are external benefits generated for which the first innovator is not fully rewarded; third, because the degree of uncertainty of more revolutionary technologies and the size of individual projects increasingly overtax the possibilities of private enterprises; and fourth, because countries - in the case of a technological gap - may not want to depend on imported technology. However, governments which intervene on behalf of specific promising new industrial activities have to assume that there is a likelihood that they can indeed perform better than the market.

36. Thus, if governments decide to intervene directly and selectively on behalf of particular promising activities, they should select from the broad range of possible cases those where support seems particularly justified. By and large, this would mean that direct government intervention should be limited to activities subject to substantial, proven, or reasonably foreseeable market failure, in which a number of competing enterprises can be involved and where national enterprises are, or can easily become, competitive on international markets. To ensure competition of ideas, aids given to specific activities should be made available to all potential developers of the new technology and not just to one or a few favoured firms. Furthermore, assistance to promising activities should be temporary and great care must be taken that governments to not try to ensure the success of initial commitments by intervening on behalf of the favoured activity or by making the commitment open-ended. Governments should also take due account of the international implications of their policies in this area.

Positive Adjustment Policies for Primary Industries

37. The general principles of positive adjustment policy, which were discussed in detail in connection with the secondary industry sector, apply basically also to primary industries, such as agriculture and coal mining. Structural adjustment to changes in demand, in the availability of inputs and in technical knowhow have essential contributions to make to optimal factor allocation, increased efficiency and overall economic growth. Whilst these general principles have to be accepted, it has also to be recognised that national policies applied to primary industry are particularly subject to specific economic and non-economic objectives. In particular, regional and national supply security and varying degrees of self-sufficiency play an important role in the current definition of policies.

38. It has to be acknowledged that the pursuit of supply security and self-sufficiency in less efficient agricultural and coal producing countries creates costs both for the countries pursuing these objectives and for their trade partners. If, for example, food and energy prices are raised above world market levels, this results not only in more expensive supplies for consumers in the countries that pursue those objectives, but it also weakens the international competitiveness of secondary industries which depend on inputs of primary resources. If the support of primary producers is brought about by subsidisation of production factors or interventions in commodity markets, the distortion of price signals may easily lead to a costly misallocation of resources. To the extent that primary producers are excluded from protected markets, they suffer welfare losses which in turn may result in lower imports. The subsequent reduction in international trade entails a loss in aggregate economic welfare.

39. From the viewpoint of positive adjustment, it is most important that the means of intervention in primary industries of countries which pursue a degree of self-sufficiency or other policy objectives should be as transparent and efficient in the use of resources as possible. Direct income supports and outright subsidies to producers, where appropriate, have advantages in this respect. While they can in some cases be expensive in terms of public expenditure and involve heavy administrative burdens, they distort market competition and resource allocation less than price fixing. And if the welfare losses resulting from income support policies within the countries pursuing these objectives are accepted as the price for attaining non-economic objectives, their greater transparency allows the public to know whether these policy goals could have been achieved more cheaply and more efficiently in a different manner.

Regional Policies and Positive Adjustment Policies Can and Should be Designed to be Mutually Supportive

40. Recent experience shows that regional investment incentives for attracting new ventures and creating employment are very sensitive to overall economic performance and international conditions. While regional support measures have an impact on the development of industrial structures, their ultimate consequences cannot be monitored within the framework of regional policies alone. In the face of the resulting uncertainties, regional policies should be designed with the intended regional bias, but without at the same time discriminating between particular activities and factor combinations. Apart from the provision of economic and social infrastructures, regional policy makers in many countries could still strengthen their efforts to contribute to economic vitality by enhancing the general climate to make it conducive to the establishment of new firms, to innovation and to encouraging dynamic entrepreneurship.

41. Although concerns with otherwise uneconomic projects or the reinforcement of regional monostructures are sometimes justified, automatic and general regional assistance systems are, from the point of view of positive adjustment, preferable to selective and discretionary interventions. When aid is discretionary, there is always some danger that, due to social and political pressures, funds are allocated to less productive firms, thereby prolonging the existence of inefficient structures and running the risk of creating over-capacities. In practice, discretionary procedures often penalise those productive firms which are ultimately more likely to promote investment and eventual employment. When selectivity is nevertheless to be applied, it would be greatly preferable to select negatively, i.e. granting regional assistance to all companies of the relevant region except those belonging to a particular activity which is already in excess capacity or dominant in the region. This would be advantageous to the diversification of economic activity and make the region more resilient to specific industrial crises.

42. A comprehensive evaluation of the structural and macroeconomic impact of regional policies is only possible if subnational aids are also taken into account. In principle, it can be argued that incentives which are decided at the subnational level have the advantage of being based on local information about the precise bottlenecks in regional development and of allowing for better fine tuning. However, these advantages must be balanced against the risk that financial incentives and aids at subnational levels distort national priorities and that local considerations override national ones. In many countries authorities below the national level are able to offer financial aids whose impact may not coincide with the regional priorities decided at national level. In these circumstances, local aids can even partially offset national assistance schemes; they may also compete amongst themselves.

Conflicts and Complementarities Between Efficiency and Equity

43. In the long run, there is a high degree of complementarity between economic efficiency and the achievement of equity and other social objectives: while sustained non-inflationary growth and high employment are essential prerequisites of continued progress in social welfare, it is equally true that a basically healthy, secure and educated population is a sine qua non of production and efficiency in a complex technological society. Hence, put into a long-term perspective, positive adjustment policies serve social policy objectives.

44. Many conflicts about the pros and cons of adjustment in the light of the aims of manpower and social policy are therefore essentially conflicts between short-term and more long-term considerations. In the difficult conditions of the 1980s, it will be a major challenge for pulicy makers to design welfare policies that are consistent with the functioning of the market economy or at least interfere as little as possible with flexible adjustment, and to design economic policies that are welfare efficient, permitting individuals to realise economic opportunities and protecting the weak.

Labour Mobility and Relative Wage Flexibility are Essential for Positive Adjustment

45. In principle, there are only two ways in which the structural adjustment process can be carried out in an open market economy. The first alternative places greatest emphasis on the shift of resources from less to more productive activities. This would be consistent with a wage policy that tried to maintain or narrow inter-industry wage differentials, but adjusted to change by accepting a relatively high labour turnover. One of the policy implications of this type of adjustment is the effective promotion of geographic and occupational mobility. The other alternative envisages less factor mobility but greater income flexibility by allowing wages to reflect more closely the relative sector-specific as well as occupational productivity differences, and demand-supply relations. In this case, wage differentials may widen, but the speed of structural change would be moderated and sector specific employment could be more easily maintained.

46. A major problem lies in the fact that countries often try to achieve both fixed inter-industry wage differentials and the maintenance of employment levels in the least competitive industries, at the same time frequently not allowing for downward flexibility of real wages. It appears that this approach is only feasible if the principles of the market economy are renounced and resort is made to international and domestic protectionism. Of course, real-world policies usually represent some kind of mixture of the three strategies. Nevertheless, it seems clear that, under conditions of slow growth and high unemployment when resistance to adjustment is great anyway, increased wage flexibility is preferable.

47. The decision on the optimal strategy mix appears to be essentially a political choice. The question arises as to the extent to which governments should play a constructive role in promoting dialogue and consensus finding between social partners. Of course, no institution can of itself wring consensus from conflict where society is itself strongly adversarial in character. Nevertheless, governments cannot be indifferent to the results and consequences of wage settlements, so that they may indeed have a responsibility for creating an environment which promotes the efficient functioning of the labour market.

Positive Adjustment and Specific Manpower and Social Policies are not Necessarily in Conflict

48. Present and future unemployment and the adjustment problems which this creates cannot be solved by relying solely on macro-economic demand management and the absolute or relative flexibility of wages. There is an urgent need to further facilitate adjustment by implementing measures which are directly addressed to the underlying specific structural and qualitative causes of mismatches in labour markets. They should embrace,first and foremost,policies designed to improve the basic conditions of labour market responsiveness by increasing the efficiency and relevance of education and training, and improving transition from school to work. These measures have long-term benefits, but they do not of course obviate the necessity for bringing immediate relief to specific groups among the unemployed and for reducing the cost of labour through changes in taxation and a careful screening of non-wage labour costs which have been imposed by legislation.

49. Social policies are primarily designed to redistribute incomes, increase employment security and reduce industrial risks. In doing so, social policies may contribute to positive adjustment. For instance, companies, workers and unions are likely to resist periodic lay-offs less when unemployment benefits are relatively high, so that a spell of unemployment involves little loss in income. However, social policies may often also have unintended negative side effects on the effective functioning of markets. In particular, the increased legislation and collective agreements which occurred in the past two decades on matters like job security, redundancy pay, prior notification of dismissals, and a substantial increase in non-wage labour costs, have made labour markets less flexible and have compartmentalised them. Such measures may conflict with the requirement for labour mobility and contribute to unemployment when conditions change.

50. Policy can frequently be redesigned to permit greater adjustments by better integration of external labour, while retaining the fundamental elements of internal adjustment such as retraining, redeployment and a reasonable degree of job security. In some countries, there may be a need to review minimum wages to fit specific groups, such as young people, and to redesign unemployment assistance schemes to include greater incentives for redeployment.

Basic Options and Policy Mix for Micro-economic Adjustment Policies

51. It is of course first and foremost a matter of political choice how to combine decentralised, individual decision-making in the market place with more centralised, administrative forms of decision making by regulation or direct public control. Governments will continuously have to make decisions in the face of social and economic evolution. Nevertheless, once the basic decision has been made in principle to rely predominantly on the market, important economic dimensions can only be ignored at great cost to the proper functioning of the market mechanism. Depending on tradition, institutions and basic philosophy, governments can opt for the following basic approaches to the fundamental issues of structural adjustment.

52. First, governments can concentrate on ensuring that the political, macro-economic and social framework is favourable to private initiative and the market mechanism. This approach would put the emphasis on factor mobility and price flexibility as basic constitutional conditions for the movement of economic activity from less promising to more rewarding activities. It would try to avoid introducing new economic risks and costs and would give high priority to enhancing the resilience of market participants in coping with change. In short, governments that favour such a preventive strategy rely primarily on macro-economic management and on competition and regulatory policies to improve the basic, self-regulating functioning of markets.

53. A second option is an anticipatory structural policy whereby governments interested in promoting economic growth, innovation and restructuring might strengthen the ability of market participants to plan ahead more directly. This strategy focusses on enabling businesses to move promptly into new, promising activities or to withdraw from declining activities. This may be done generally by the provision of consistent medium- and long-term structural projections and other forward looking information on particular sectors. More specifically, governments may exercise more or less indirect guidance by granting subsidies,or intervening otherwise to encourage restructuring in the directions deemed to be desirable. This approach would be compatible with a free development of market forces, as long as private investors are at liberty to accept or reject such propositions and as long as financial incentives provided by governments are restricted.

54. A third strategy,under which governments may also intervene in order to reduce the rate of structural change,is more defensive. Governments may adopt such a strategy in response to requests from supplier groups who ask for support for structurally weak industries. Such measures may be justifiable if industrial decline is held to be temporary, if rapid contraction of an industry creates excessive social costs, or if public assistance will ensure a rejuvenation and rationalisation of the industry. Although governments slow down structural adjustment under such a defensive adjustment strategy, they still accept that markets play a major role in bringing about the required adaptation to new circumstances.

55. This contrasts with a fourth approach, in which governments intervene directly to achieve given structural objectives, by controlling either market parameters such as demand, supply and prices, or plans for investment and production. Control may be achieved by public ownership, by public control of management, or by direct regulation of economic activities. The involvement of government in production may help to create new activities where business dynamics would not have established them but it may also maintain non-competitive production capacities and hamper adaptation.

56. The structural adjustment strategies pursued by OECD Member countries comprise all these four approaches, although the weight given to each of them varies considerably. The policy mix is largely determined by the particular political, economic, social and institutional conditions of each country, as well as by historical patterns in the relationship between government and industry. Nevertheless, experience appears to show that, in general, preventive and anticipatory policies are more in line with positive adjustment than selective, defensive policies or direct government involvement in production.

International Trade and Capital Flows Promote Positive Adjustment

57. International trade continues to be one of the most important sources of economic growth and structural flexibility. Many of the inevitable imbalances between the dynamically changing demands and supplies in national markets are redressed by international exchange. International competition also stimulates innovation and the growth of promising new activities. Not only does trade transfer ideas and designs, but world-market demand often encourages innovations for which the domestic market - at least initially - is too small. This is particularly important for technologically advanced small countries whose large-scale industries could not prosper without free trade and payments.

58. Whilst pressures for the adjustment of industrial structures, which are caused by international competition, tend to attract much public attention, it is frequently not taken into account that international trade often allows producers to avoid certain changes in production and employment structures. For instance, many jobs in OECD industries remain internationally competitive thanks to cheaper imported inputs.

59. In the changed international economic and political climate of the 1970s and 1980s, international economic integration and trade have for many observers lower priority than immediate concerns with growth, unemployment, inflation and domestic structural problems. Instead of using trade as one of the means to master these problems, nations often appear to seek fast and facile solutions at the expense of foreign suppliers and to worry about the long-term side effects later. Yet, the unmistakable lesson of failures of the 1930s and of the successes in the post war period is that little can be gained and much lost by overt and covert economic nationalism.

The Increase of the Relative Importance of NTBs and Export Subsidies

60. The very success of the reduction of quantitative restrictions as a first step and of subsequent tariff cuts has made non-tariff barriers and export subsidies, whether long established or new, relatively more important. Moreover, countries often intervened in the 1970s on behalf of their immediate national interests by imposing new non-conventional barriers to trade which are not proscribed by international agreements such as GATT and cannot be easily controlled. These measures include orderly marketing arrangements, voluntary export restraints, trigger price mechanisms and procurement policies. Export subsidies which can harm international trade occur primarily in trade with developing countries, where public development aid and trade are often intertwined, and with Eastern state-trading countries.

61. The example of voluntary export restraints and orderly marketing arrangements, which have increasingly been imposed by importing nations on successful exporting countries, shows that the new protectionism has similar effects to those of traditional trade restrictions. Although such voluntary restraints may be less durable than tariffs or quotas, they reduce the incentives to declining industries for structural adjustment. These arrangements normally also create considerable uncertainties for efficient suppliers in new industrial countries and limit their growth opportunities. Furthermore, the proliferation of such measures has in several cases led to increased pressure on other OECD countries which had not resorted to this practice, thus leading to chain reactions.

62. As most structural problems of today are shared by the majority of industrial countries, artificial export supports run a serious danger of aggravating the problems of excess capacity in other countries. Whilst one country can always solve its own problem of excess capacities by subsidising exports, all nations taken together cannot. Export subsidies can thus amount to structural beggar-thy-neighbour policies which lead to international repercussions in the form of countervailing interventions. The final effect would be an overall deterioration of the world trade system. In the face of the real dangers of trade confrontation, it seems necessary to set up faster and more positive mechanisms of structural adjustment in the industrial economies and to find ways to speed up the orderly solution of international trade conflicts.

Domestic Policies Can Have Negative International Side Effects

63. The degree of international integration reached among industrial countries by the start of the 1980s ensures that virtually all economic policy measures affect foreign economic interests. An illustrative example is the practice of granting employment or wage subsidies to declining labour-intensive activities for social and employment reasons. Insofar as these

subsidies are successful in conserving jobs, they of course also maintain production capacities which otherwise might not survive. These capacities exert additional competitive pressures on other firms both at home and abroad. In other words, as in other cases of government intervention, the adjustment burdens - in particular the unemployment problems - might to a certain extent be "exported".

64. The effects on international trade, comparative advantage and global welfare of subsidies to promising new industrial activities - or other government actions which intentionally or not are equivalent to subsidies - are normally more complex than similar assistance to declining activities. Where a new technology is developed, this is likely to enhance global welfare, a precondition for global economic and social progress. This is of course true whether or not the technology is developed by means of government support. Indeed the shift of comparative advantages by man-made factors such as innovation belongs to the very essence of economic development.

65. If a new technology is applied in industry, consumers are likely to benefit worldwide as a result of new or improved products and reduced prices. Normally on the production side a large fraction of the opportunities and benefits of any new technology will be captured - at the outset, at least - by the innovating industry and inside the innovating country. This will be especially so if the innovating entity is able to establish a monopoly to exploit the technology. Benefits are then transferred from old producers to the producers of the innovating country, as a consequence of a shift in comparative advantage. As long as world trade and income levels increased rather rapidly, such redistribution effects between producers were easier to tolerate.

66. However, experiences in the slow growth climate of the late 1970s and early 1980s have shown that shifts in comparative advantage through inventive activity and a resultant short-run welfare loss in the countries holding the obsolete technology may create political pressures to protect the threatened industry or to subsidise its modernisation. This is particularly likely where it is believed by those in the threatened industry that there are connections between a research and development subsidy in one country and obsolescence in their own country. If numerous countries begin to subsidise the same promising industry, there is a danger of worldwide excess capacity, as may be the case in the aircraft industry. In the event that government support to specific industries were to abruptly upset the market structure and thereby create trade and employment problems, there would be a serious risk of international economic conflict. The risk would be reduced if benefits of technological innovation were widely distributed by international co-operation in an expanding world economy and if any new forms of protectionism in promising activites were avoided.

67. Policies towards primary industries, including agriculture, should take account of their international implications. In the pursuit of domestic objectives, such as income support, regional development, national food security or the elimination of

market abuses, regard should be paid to the advantages of supply from internationally efficient producers. In this context, it can be doubted that the broader objectives of agricultural policy actually require in all cases levels of agricultural protection as high as those now observed. Finally, present agricultural policies make many world markets for agricultural products residual in character, which is one of the reasons for instability in demand and supply at the international level.

68. Despite existing obstacles for foreign competitors in the form of various types of regulation, the service sector has not only grown faster than the primary and secondary industries of the most advanced OECD countries but has also contributed substantially to international economic integration. However, regulations that are based on outdated economic and technological conditions may pose particular problems in the service sector, which is likely to be one of the areas of fastest innovation and productivity growth in the future. It will therefore be essential for further structural adjustment to new opportunities in the production and distribution of services to facilitate the international transfer of service-sector technologies and at the same time to promote international competition in services.

Transparency is an Essential Prerequisite for Policies that Favour Positive Domestic and International Adjustment

69. Whenever governments intervene in national or international markets, a design and style of intervention which provides transparency and allows insiders and outsiders to assess the intentions and probable consequences of policy can make an important contribution to positive adjustment. Transparency can not only help policy makers and the public to gain more complete information about the basic conditions of market activity, but also tends to create the necessary counter-weights to well organised supplier groups that seek support for the conservation of obsolescent structures. Transparency forces policy makers to assess the consequences of their actions, protecting them against hasty and inconsistent decisions and making them more aware of the fact that markets tolerate a certain degree of interference, but that the system breaks down easily under the influence of manifold, contradictory and cumulative interference.

70. It is not always possible to achieve full transparency. Some measures - like fixing prices at disequilibria levels - tend to make it difficult to assess their full long-run consequences, whereas others - like open budget subsidies - tend to promote transparency. Yet others - like certain fiscal measures - can be appropriate in some cases for positive adjustment, but are less readily transparent. Thus, transparency cannot be the only criterion by which the choice of the form of assistance is judged. Nevertheless, it remains an essential criterion, and should be achieved whenever possible. These questions are dealt with in a separate report on transparency to be published later.

Senator HEINZ. One of the elements that you single out in your testimony which is quite interesting is what I might call a subsidy to employees while they are still employed in a distressed industry. I gather the larger firms are expected or are encouraged to retrain employees. The smaller firms presumably have less ability to do that.

I am not quite clear, though, if in the medium-sized and smaller firms the employee is simply subsidized to stay on the job, or whether he is also simultaneously being retrained. Could you clarify that?

Mr. MENDELOWITZ. It is our understanding that for employees who remain on the job in eligible small- and medium-sized firms, the company for which they work can receive a reimbursement for one-half or two-thirds of their salary from the Government. Companies receive these payments only when they have prepared an acceptable adjustment plan that demonstrates what they are going to do to become more competitive and reinstitute these employees' positions with their full salary without Government subsidy.

Senator HEINZ. So it is not necessarily linked, but it could be linked, to retraining?

Mr. MENDELOWITZ. Yes, sir.

Senator HEINZ. These adjustment statutes bear some amazing resemblances to S. 849, the Industrial Revitalization Act which I introduced, although I have no financial assistance in my legislation, nor would I favor any. The key question that I would like to ask you is how successful have industries been in becoming more competitive as a result of these statutes? And how does one measure that?

Mr. MENDELOWITZ. I must say that's a very difficult question to answer. That's certainly the nub of the issue.

Senator HEINZ. Yes.

Mr. MENDELOWITZ. I think that the issue of the success of these adjustment plans is something that is open to considerable debate in Japan today.

There are several different ways of measuring success. One obvious one is to look at the performance of an industry with the Government assistance and then try to determine what the condition of the industry would be without the Government assistance. Then that change is your definition of the measure of success of the program.

Senator HEINZ. Conceptually it is a useful tool to look at it that way. Can you do it that way?

Mr. MENDELOWITZ. It is possible to do. Obviously there is some error in measurement or projection of what the industry might be doing in the absence of the programs.

A second measure of success might be to try to assess the shortrun versus the longrun consequences of these programs. And in the case of certain Japanese industries that have benefited from the designation of "depressed," such as the shipbuilding industry, we would say there is a measure of shortrun success because the industry contracted, returned to profitability, retains a large share of the world market, and is no longer designated as a depressed industry.

Other industries, which have been designated in the 1970's and continue to be designated in the 1980's such as the aluminum industry, have not returned to profitability, and it is probably unlikely that they would ever return to profitability.

Senator HEINZ. What industry did you mention?

Mr. MENDELOWITZ. Aluminum—aluminum smelting.

A third measure of success I think might deal with the costs associated with adjustment. I think that to the extent to which any of these programs try to ease adjustment and move with the market, they can be somewhat beneficial in minimizing or reducing the costs of any disruption associated with structural change. To the extent that these programs try to counteract movement of the market and prevent structural changes, then I guess one would say that you would have to determine that they have been very unsuccessful because they are trying to work against market forces.

Senator HEINZ. Looking, in the case of the shipbuilding, at a successful adjustment effort, and in the other, aluminum, which you say was unsuccessful, what seemed to be the differences in approach that would distinguish one from the other and that might have led to the success or failure of one or the other?

Mr. MENDELOWITZ. I think the key difference between shipbuilding and aluminum is not the difference in the approach so much as it was the difference in what caused the problems of the industry.

The shipbuilding industry, following the 1974 oil embargo and the subsequent increase in the price of oil, was subjected to drastic reduction in demand for its product. The industry was extraordinarily well run and a competitive industry, as measured by the share of the world market it held, so the problem became one of how to prevent the industry from going bankrupt because of a decline in demand and help the industry adjust to very substantially reduced world demand for the product.

In the case of the aluminum industry, you have an industry where the primary cost of production is the cost of electricity that goes into the smelting of the product. Historically the most competitive aluminum smelting activities have taken place in locations where there has been abundant cheap electricity, primarily cheap hydroelectricity, such as the northwest of the United States.

The Japanese industry had, for the most part, electricity generated by crude oil or other hydrocarbon products, and when the price of oil shot up, the price of electricity in Japan quadrupled. As long as you are facing such a fundamental lack of competitiveness because of the high price of the key ingredient——

Senator HEINZ. You might say they had an irreconcilable competitive disadvantage

Mr. MENDELOWITZ. I think you have put your finger on it exactly.

Senator HEINZ. Is it a fair generalization to say that, absent that kind of clearly impossible competitive disadvantage, on the whole the program has been successful? Or is it not possible to say that?

Mr. MENDELOWITZ. I think that it would be going somewhat beyond the scope of work to make a definitive statement, Senator.

Senator HEINZ. Would it be possible with further study to determine the extent of the success?

Mr. **Mendelowitz**. I think the general proposition is that it is always possible to try to measure the success of any Government program. In order to do that in this case would require very substantial additional work.

Senator **Heinz**. Any volunteers to go to Japan? [Laughter.]

Mr. Mendelowitz, and your staff, thank you very much. We appreciate your being here today. Thank you.

Mr. **Mendelowitz**. Thank you very much.

Senator **Heinz**. Our next witness is Dr. Jerry Jasinowski, the chief economist for the NAM.

Jerry, welcome back. You are no stranger to this committee.

Please proceed.

STATEMENT OF JERRY JASINOWSKI, CHIEF ECONOMIST, NATIONAL ASSOCIATION OF MANUFACTURERS, WASHINGTON, D.C.

Mr. **Jasinowski**. Thank you very much, Mr. Chairman.

I would like to abbreviate my remarks and ask for the full statement to be put into the record.

Senator **Heinz**. Without objection, so ordered.

Mr. **Jasinowski**. Let me begin by saying that the National Association of Manufacturers would commend you for your interest and review of this subject and look forward to working with you in this area as we have in the trade area, and of course the two very closely overlap.

I would like to do two things this morning, Mr. Chairman, one, to sketch the broad considerations of the industrial policy debate, and second, to put the bill that you have put forward, S. 849, in that context.

In order to discuss the larger industrial policy question, I want to begin by simply summarizing the causes of our industrial decline, which we have done in some detail in the statement. When you look carefully at the debate, there are really four major causes for our industrial deterioration:

One, the increased business cycle volatility of the 1970's, which is due to the oil shocks, the poor macroeconomic management, the worsening of what I would call the "Phillips curve tradeoff," and some other matters which are really in the broad area of macroeconomic policy. The effect of all of this over the past 3 years has been to raise interest rates, the dollar exchange rate, and to cause extraordinary dislocations in the American industrial community. This is the principal cause of the problems of American industry, and these cyclical problems are unique in this period compared to the postwar period.

Second, in addition to this, there has been a significant loss in international trade competitiveness since 1980. Part of this is due to the over valued dollar, but beyond this differentials in productivity and labor costs, differences in export and other policies such as you are investigating this morning, and other factors, have caused a clear decline in our industrial competitiveness.

Third, there are longer term structural problems. They are not as large as most people think, because the cyclical problems tend to cause most of what are called structural problems. But clearly there has been a long-term decline in what economists call "potential GNP" and in cyclically-adjusted productivity, and that in turn is due to decreases in capital formation, increased regulatory costs, changes in the demographics of the labor force, a decline in the financial profile of industry, and other factors such as decreases in R&D spending.

Finally, as important as these public policy questions, there are clear corporate-level deficiencies which consist, frankly, of bad management on the part of American corporations. Coupled with this is the behavior of unions which have in many cases tended to ask for and receive wages which were much higher than productivity and as a result raise costs in many of our industries to a position where they are not competitive.

When I speak of management deficiencies, I am really talking about the bureaucratic nature of some modern corporations, the slowness to adjust to a new world economy, slowness to adjust to technological change, and other matters that adversely affect productivity.

Let me conclude the discussion of these causes, Mr. Chairman, by simply saying they point the direction for future policy recommendations. I would argue that they do not point in the direction of picking winners and losers and RFC proposals, simply because the causes I have just described are not remedied by the kind of highly specific intervention in individual industries associated with the industrial policy arguments.

For that reason I would go further and simply say the industrial policy debate, as it has evolved in this country over this country in the last 6 months, has already peaked; that is to say, the arguments made by Lester Thureau and Bob Reich and Felix Romayn have now been widely publicized. We are now going into a new area in which people are going to say, "All right, we don't want to adopt industrial ploicy satutions, but you can't solve the problem by just macropolicies. What are the policies that ought to be applied?" And here, to outline it very briefly, I would say we ought to be looking at broader policies that are cross-industry in scope and that focus on long-term growth, productivity and international trade competitiveness issues.

And of course the bill you have introduced falls into that category.

But let me go a bit further and say that in this broader area there is a whole range of policies, which we have outlined in part in the testimony, in the international trade area, that could be considered as means of restraining competitiveness. They run, as you know, from the whole question of the dollar, through the Ex-Im Bank, doing a better job on the Export Administration Act, and providing incentives which are really adequate to insure export growth.

And then in the growth area you need policies to improve capital investment. And if you take the technology area, which is also very important, the following policies will be applicable: From R&D tax credits, patent term restoration, joint R&D ventures, and a number of things that we have outlined in the testimony.

Let me conclude, Mr. Chairman, by saying that with respect to the bill that you have introduced, it is I think a positive contribution to the dialog.

I would like to make three general points about section 201 of the Trade Act, and then conclude my testimony.

Bearing in mind that section 201—I am now going to read; "The U.S. escape clause is the domestic expression of the escape clause in international law." We feel it would be a mistake to allow U.S. law to be more restrictive than the GATT. We have, therefore, in the past suggested to the U.S. Trade Representative and others that we ought to change 201 and make it simpler by elimination of this substantial cause test.

Second, because we are still hopeful about a safeguards code, we have said if we can't achieve that we don't want to open up 201 altogether; we think a lot of this can be addressed in a safeguards code.

Third, however one decides to move on this, we think it is very important for the President to remain in the process, because there are equity considerations that can best be dealt with by the Executive.

With respect to the tripartite part of your bill, we think that this is a whole other matter, and it stands on separate grounds, and it really has to be looked at in the trade reorganization bill that is being debated and in a wide variety of industrial policy debates going on. We are studying this matter and would like to work closely with you on the final resolution of it.

Finally, with respect to the bill as it treats 201, I was somewhat puzzled as to whether or not the bill is aimed at speeding up the 201 process and making it easier, or frankly making it more difficult. While on the one hand you reduce the injury test, which would make it simpler, the addition of this tripartite commission would in my opinion certainly raise the risk of making it more complicated.

Having staffed the steel tripartite committee in the Carter administration for well over a year, I can tell you that it is extremely difficult to make those kinds of processes work, and that's regarded as one of the more important considerations involved in implementing such a policy.

Mr. Chairman, that concludes my testimony. Again, let me reiterate that, as in the trade area, this is a very positive proposal, and I think the hearings themselves are very important. We would like to work in every way we can and help you and the committee in this process.

Senator HEINZ. Mr. Jasinowski, thank you very much.

[The prepared statement of Jerry Jasinowski follows:]

STATEMENT OF
JERRY JASINOWSKI
EXECUTIVE VICE PRESIDENT AND CHIEF ECONOMIST
NATIONAL ASSOCIATION OF MANUFACTURERS
BEFORE THE
SUBCOMMITTEE ON ECONOMIC GROWTH
OF THE
SENATE FINANCE COMMITTEE
ON
THE FUTURE OF AMERICAN INDUSTRY
OCTOBER 3, 1983

I am Jerry Jasinowski, Executive Vice-President and Chief Economist of the National Association of Manufacturers. On behalf of NAM's more than 13,000 members who account for 85% of the nation's industrial production and 80% of its industrial workforce, I am pleased to have this opportunity to present my views on the future of American industry, with particular reference to the causes of industrial decline and public policy solutions.

INTRODUCTION AND SUMMARY

There is a growing debate in economics and public policy over the nature of the problems currently facing American industry. More specifically, there is considerable controversy as to whether these problems be regarded as essentially cyclical, or longer-term and structural in origin. The two, however, are not necessarily irreconcilable, and a careful review of the evidence suggests that both cyclical, structural and other factors have been at work.

In Part I of this statement, we overview the major causes of deteriorating industrial performance. The problems of American industry can be analyzed as a function of four major causal factors. These are: 1. greater business cycle instability, resulting from the combination of external shocks, financial volatility and poor macroeconomic policies; 2. declines in international competitiveness; 3. longer term structural problems as reflected in declining capital formation, productivity and R&D, resulting from changes in relative energy prices and the user cost of capital, and a deteriorating financial profile of business; 4. corporate factors, including both poor decision-making on the part of management and pervasive rigidities in wage settlements.

Part II deals with policy solutions. While it is increasingly common at this juncture to advocate some form of industrial policy, involving government interventionism on behalf of particular industrial sectors, my view is that policy should aim at a broader industrial strategy which would coordinate macroeconomic and other policies in order to improve general industrial development and achieve higher longer term growth rates. The elements of such an industrial strategy should include: 1. Better macroeconomic policies, commensurate with a stable long term growth path for the economy and non-accelerating inflation; 2. policies to increase competitiveness in international markets (S. 849 is discussed in this context); 3. policies aimed at increasing long term economic growth by raising factor inputs of production. The coordination of these three policy areas is based on the need to simultaneously address the demand and supply sides of the economy.

I. THE PROCESS OF INDUSTRIAL DECLINE

It is now generally acknowledged that the performance of the American economy has deteriorated, both domestically and in world markets. Major signs of decline include prolonged, deep recessions, lost domestic and international market share, poor productivity performance relative to our competitors, inadequate capital formation, decreased employment opportunities, a weakened financial condition and a decline in real profitability. As indicated above, these manifestations of decline do not reflect any single cause, but are due to a confluence of diverse causes.

Of these, one key problem has to do with greater volatility in the business cycle, as reflected in the series of booms during the 1970s followed by prolonged, acute recessionary periods. The result was that since the early 1970s there have been two major recessionary periods, consisting of three distinct downturns in 1974-75, 1980 and 1981-82, which overall have been unusually severe by postwar standards. These cycles have also been characterized by an extraordinary degree of financial instability, which is particularly illustrated by the exceedingly high level of interest rates experienced during the recessions. The performance contrasts unfavorably with the experience during the 1960s, when the economy underwent eight years of continuous growth, and the recessionary periods were comparatively mild.

A second major causal area has to do with the fact that the performance of American industry in international markets has been erratic, consisting of periodic booms that were followed by serious losses in competitiveness and subsequent contractions in the export volume. Most recently, this has primarily reflected the impact of the sharp appreciation of the dollar beginning in late 1980. However, over the past decade, American trade competitiveness also suffered from the effects of fluctuations in the exchange rate, differentials in the gorwth rate of unit labor costs and productivity, differentials in the growth rate of domestic aggregate demand, and inadequate export promotion policies. The net result was that the United States was not able to increase its exports of industrial goods as rapidly as the other industrial countries, and as a result underwent a gradual loss in global market share. There has also been a long term deterioration in the American share of the domestic market, which has been subject to greater import penetration.

Third, apart from the cyclical components of the decline, there have been a series of longer run structural problems, which have contributed to a lowering of potential GNP, and which are also manifested in a deterioration in cyclically adjusted productivity growth. These structural problems include external factors such as the change in relative energy prices, but also comprise domestic factors such as deterioration in the capacity to invest caused in part by increases in the user cost of capital, a worsening of the financial profile of industry, decreases in research and development spending, and the diversion of capital and resources into regulatory compliance activity.

It is to be emphasized here that most of these problems are labelled structural not because of evidence of secular decline, but rather because the cyclic lows of indicators such as capital formation and profitability have been deeper over the past decade than can be explained solely on the basis of cyclical declines in economic activity. The result is to suggest that exogenous factors such as the OPEC shocks and other non-cyclical factors such as unprecedented increases in the user cost of capital played a substantial role here. On the other hand, there is evidence of a long-term decline in productivity growth, superimposed on sharp cyclical contractions during recessionary periods. The one indicator which does not exhibit strong cyclical behavior here is R&D spending, which underwent a process of gradual decline from the late 1960s through the mid-1970s; the causes of this process may have had to do with slower growth in corporate profitability at this time.

Finally, a fourth element has to do with corporate factors. At the single firm level, the slowness of corporate bureaucracies to respond to the opening up of the economy as well as other major changes in the environment contributed to the failure of American firms to penetrate export markets, while at the same time, there has been insufficient emphasis on improving productivity at the single firm level. Side by side with inferior management practices, labor unions have set wage demands at levels incommensurate with price stability and retention of international competitiveness. As a result of pervasive rigidities in wage settlements, wage-price cycles have been prevented from equilibrating downward during disinflationary periods, leading to a major upward cost bias in which the costs of disinflation have been borne disproportionately by decreases in output, employment, and corporate profit margins.

The division of the causes of decline into four causal categories in turn points in the direction of where the appropriate policy solutions lie. While one possible area for policy initiatives lies with so-called industrial policies, defined primarily as governmental support for particular industrial sectors through increased planning or targeting process this approach is flawed because it does not adequately address the actual causes of industrial decline. Rather, what is needed is a broader industrial strategy, in which macroeconomic policies aimed at stabilizing the business cycle will be applied in conjunction with more specific policies aimed at improving export competitiveness and improving long term growth.

Only three main policy areas are identified as the basis for an industrial strategy, despite the fact that four major causal areas have been delineated as the determinants of industrial deterioration. Inasmuch as one of the causal areas is at the corporate level, there is little grounds for believing that these problems are readily amenable to public policy solutions. Ultimately, the resolution of problems at the corporate level is not the appropriate domain of the Federal government, but rather requires that improved management practices and greater recognition on the part of labor that the system of wage settlements that prevailed during the 1970s must be modified if high employment and greater price stability are to be restored.

II. POLICY SOLUTIONS.

Macroeconomic Policies At the macroeconomic level, what is needed is to achieve a mix of fiscal and monetary policies commensurate with stable economic growth, without engendering a renewed acceleration in inflation.

In the fiscal area, the key problem for the next few years will be elimination of the structual deficits. At their current levels, deficits will average in the range of 5% to 6% of GNP over the upcoming business cycle. Deficits of this magnitude are not commensurate with general economic stability. Since financing the Federal Government's borrowing requirement through money creation would inevitably entail an explosion in monetary aggregates followed by accelerating inflation, they must be accompanied with non-accommodative monetary policies, which will necessitate financing the deficit through borrowing from private savings and through reserve inflows. This in turn will imply pressure on interest rates due to the "crowding out" process in credit markets, and will militate against a major decline in the dollar exchange rate.

As the basis for reducing the Federal deficit to a level more commensurate with macroeconomic stability, Congress should bring the full-employment budget into surplus, which would require reducing the deficit by approximately 2.5% of GNP. This constitutes a major step toward removing the imbalance between fiscal and monetary policy, thereby mitigating pressure on interest rates. It would also free capital and resources for the private sector, enabling faster rates of real growth, particularly in sectors such as housing and durable manufacturing where the final status of aggregate demand is critically dependent on the cost and availability of long term credit. With the full-employment budget in surplus, the actual budget could gradually be brought into equilibrium as the economy converges to a level of unemployment commensurate with fuller utilization of resources.

In the area of monetary policy, the principle of quantitative targets for monetary aggregates is useful and should be retained. However, such targets should be applied flexibly and in conjunction with targets for other indicators, rather than rigidly. In this respect, the Federal Reserve should consider formally adopting a multiple target system in which annual targets would be used for monetary aggregates and nominal GNP, but in which interest rates and exchange rates would be stabilized in the short term. The central banks of the other major industrial countries have successfully used multiple target systems.

Policies to Promote International Competitiveness

Before addressing specific provisions of S. 849, I should like to make three general points about Section 201 of the Trade Act of 1974:

i) bearing in mind that Section 201, the U.S. escape clause, is the domestic expression of the escape clause in international law, Article XIX of the General Agreement on Tariffs and Trade, we feel it would be a mistake to allow U.S. law to become more restrictive than the GATT. That only leads to disenchantment with international law when in fact our frustrations are with self-imposed limits, not international ones. It is this logic that has led us in the past to suggest the elimination of the substantial cause test of Section 201;

ii) because we are still hopeful that the United States and its trading partners will reach agreement on a new safeguards code, we are reluctant to suggest any major revisions of 201 at this time. It would be better to make these in light of the new code than in anticipation of it.

iii) recognizing that import limitations under Section 201 represent assistance to one sector and costs to others that may not have been represented in the ITC proceedings, it is important that the final decision about this kind of relief be the President's. He is in the best position to evaluate the effect of granting relief on the economy as a whole. Further, the fact that he can negotiate with exporting countries means that in many instances he will be able to mitigate the negative effects of relief, e.g., potential retaliation.

Against the background of these convictions, we cannot urge the passage of S. 849. Were we to recommend changing Section 201, it would simply be the elimination of the substantial cause test. In light of the fact that 201 cases need not involve any allegation of wrongdoing, on the part of the foreign exporter and that the GATT standard for this kind of relief is serious injury or threat thereof, we do not believe it makes sense to lower the degree of injury to that which applies when wrongdoing is an element as in countervailing duty cases.

Yet in a sense these criticisms of S. 849 are unfair because they do not deal with the heart of the bill: the provision for an adjustment plan development group to consider what it would take to put an industry seeking relief back on its feet. The tipartite approach envisioned, i.e., representatives of business, government, and labor, is clearly one of the more important contributions to the public debate about industrial strategy in America. I am not prepared today to say that NAM favors or opposes this approach. I can say that we are giving it serious consideration, and further, that in our view it would be a mistake to inject such a group into the 201 process at this time.

While reform of Section 201 could be valuable, a systematic policy aiming at export promotion would require a broader range of policies, including both better demand management policies aimed at restoring a more realistic dollar exchange rate, and other policies to enhance export competitiveness.

First, a somewhat looser monetary stance and some decline in interest rates will in and of itself be associated with the restoration of a more realistic exchange rate. In this respect, it must be borne in mind that the primary causes of the appreciation of the dollar during the last few years have had to do with the differential in interest rates between the United States and other industrial countries. Since 1980, the dollar has appreciated in nominal terms by slightly less than 40% on a multilateral trade-weighted basis. The fundamental impact of the rise in American interest rates has been to increase international purchases of dollar-denominated financial assets. At the same time, the dollar has also been raised by increased worldwide demand for dollar reserves to pay for imports (particularly dollar-denominated OPEC oil prices), by the "safe-haven" effect due to greater political stability in the United States than in other countries, and by speculative factors. Consequently, the restoration of a more realistic dollar exchange rate will require primarily a mitigation of the interest rate differential.

Second, efforts should be made to facilitate financing of exports. The Eximbank should be given the financial necessary budget authority to provide competitive financing for exports, and new financial instruments should be developed to support commercially competitive medium term export credit.

Third, DISCs (Domestic International Sales Corporations) should be maintained until Congress passes legislation providing equivalent or improved benefits for U.S. exports. export trading company legislation should be adopted in order to reduce the current legal uncertainty concerning the operation of anti-trust laws and other laws affecting exports.

Fourth, the Foreign Corrupt Practices and Export Administration Acts should be amended to clarify existing ambiguities and remove unecessary impediments to exports.

One of the reasons why policies such as this are desirable is that in the international trade area, American industry is dealing not with free markets but with highly interventionist practices on the part of foreign governments. For the most part, American industry has been forced to compete in world markets as individual companies with little government support. Conversely, most of the other industrial countries have undertaken extensive governmental support for their export industries, through nationalizations or subsidies to exporting firms, and the creation of semi-public corporations. In this respect, American companies have frequently been in the situation of competitive firms facing governmentally sanctioned monopolies. Consequently, while NAM has consistently emphasized the need for less government intervention and more reliance on free markets, it must be acknowledged that in the area of international trade where the functioning of free markets has been systematically impeded by foreign governments, greater governmental support for American exports would be desirable. In addition, we must have strict enforcement of the existing trade laws, such as prohibitions against "dumping" and other comparable trade practices.

Policies to Promote Long Term Growth In the normal specification of the long term production capability of the economy, potential output is a combination of technological change plus factor inputs of capital, labor and energy (in some recent respecficiations of the production function R&D is added as a separate component). Potential output is normally modelled as a long term cyclically neutral trend, while deviations in actual output from its potential level are determined by changes in aggregate demand. From this perspective, it is clear that a general industrial strategy commensurate with high growth and macroeconomic stability must address both the factor inputs that go into the determination of potential output, and macroeconomic policy

With reference specifically to the determination of potential output, it has become apparent in retrospect that the experience of the past few years has led to a net contraction in productive capacity. In particular, the second OPEC crisis, like the first in 1973-74, has reduced both factor inputs of energy and has contributed to making the capital stock increasingly obsolescent, due to the complementarity between capital and energy. Furthermore, the result of several additional factors -- increases in the user cost of capital, pervasive business illiquidity, and cyclical decreases in capacity utilization associated with the recent recessionary period -- have all contributed to a diminution of the capital stock. At the same time, the diversion of investment into regulatory compliance activity associated with the growth of regulation during the last ten years has also reduced the level of potential output from what it would have reached in the absence of regulatory drag. Finally, there is evidence of a marked falling off of R&D spending during the early 1970s, although more recently this trend has been reversed, and R&D spending has shown some increases during the past few years.

Under the circumstances, policies aimed at raising potential output must involve increasing factor inputs of capital, energy and R&D, in order to compensate for recent developments which have adversely affected the growth of the economy's productive capacity. The following roster of policy options is by no means all-inclusive, but is intended to illustrate some of the major components of an industrial strategy aimed at raising our long term growth potential.

In the area of capital formation, the ERTA depreciation reform should be retained in its current form, or possibly improved either through repeal of the TEFRA modifications, or other tax measures that encourage capital formation. To some degree, of course, the achievement of higher capital spending will also require better macroeconomic policies. A reduction in the Federal deficit achieved through reductions in Federal spending, applied in conjunction with a stable monetary policy will be associated with a reduction in interest rates, and will therefore reduce the user cost of capital. Measures to promote greater saving in the long term will also contribute positively to capital formation; however, this recommendation is subject to the caveat that the potentially beneficial effects of higher savings through greater overall liquidity cannot be expected to raise capital investment until the economy has converged to a higher level of capacity utilization. In this sense, a critical component of improving capital formation will be for macroeconomic policies to insure prolongation of the current recovery.

In the area of energy, the recent decline in OPEC prices will contribute positively to increased energy utilization, and thus has exerted a stimulative effect on economic activity. At the same time, all remaining price controls on domestic energy particularly those relating to natural gas, should be removed. By allowing prices of energy to return to market levels, the process of market equilibration in the energy sector can be enhanced. The damaging effect of price controls on the energy sector can be seen in the fact that the retention of price controls on domestic oil following the first OPEC crisis delayed the adjustment of domestic markets to higher world energy prices, creating distortions, and increasing American dependence on foreign sources of oil. The removal of oil price controls in 1980 on the other hand is generally regarded as having increased domestic output of energy by allowing market mechanisms to substitute for controlled prices which could not approximate actual conditions of demand and supply.

In the area of R&D, two major actions were taken under ERTA which have stimulated greater spending on research. These were the incremental R&D tax credit, and repeal of Section 1.861 of the Treasury Regulations, which forced companies to apportion their research activities among their foreign subsidiaries, and is generally viewed as having shifted research activity into other countries. Both of these measures were taken only temporarily under ERTA. NAM has testified on behalf of making the modification of 861 regulations permanent on prior occasions, and we would like to reiterate this commitment here. Congress should also make the incremental tax credit permanent.

Further, other measures can be taken to increase R&D spending such as exempting joint research ventures from Federal anti-trust legislation, restortation of patent terms, and in cooperative efforts between the public and private sector to share research and improve technical training.

III. CONCLUSIONS

In this statement, I have outlined what constitute in my view the most important components of industrial decline, and provided some preliminary indications as to the means whereby a broad industrial strategy to address these causes could be developed. The underlying theme of my comments has been that the problems facing American industry, and the causes thereof, cannot be analyzed in a single dimension, but require recourse to a more multidimensional approach. This approach, or industrial strategy, requires better macroeconomic policies in order to bring the economy to its equilibrium growth trajectory, and to insure that it is not subject to the destabilizing boom-bust cycles of the last ten years. At the same time, the implementation of macroeconomic policies more commensurate with a stable long term growth path will also assist in the achievement of higher potential output by reducing the user cost of capital and by allowing the dollar to return to a more realistic exchange rate. While better macroeconomic policies therefore represent a key component of a successful industrial strategy, they should also be accompanied by specific policies to increase the international competitiveness of American industry and increase the growth of factor inputs to production. An industrial strategy which addresses these diverse needs could go a long way toward the restoration of stable long term growth and improved industrial competativeness.

The political basis for the implementation of such an industrial strategy in turn will require the emergence of a broader consensus among business, labor, and the Federal government on the need for achieving higher long term growth rates.

Senator HEINZ. Let me ask you a question with respect to some of your comments on S. 849. You point out on page 10:

> Recognizing that import limitations under section 201 represent assistance to one sector and costs to others that may not have been represented in the ITC proceedings, it is important that the final decision about this kind of relief be the President's.

Under S. 849, we have arranged a process, in a sense quarterbacked by the U.S. International Trade Commission, where Presidential appointees at the Commerce Department and the Labor Department work out an adjustment plan for the industry. And in a sense the President, through those individuals, is represented. And indeed that is the intention.

Are you saying that, notwithstanding any other reservations you may have, you think there should be explicit authority for the President to deny any kind of import relief under this kind of a modification of 201?

Mr. JASINOWSKI. Well, I guess, Mr. Chairman, our concern was that the absence of the President in here was an effort to make the process simpler and quicker. We would welcome that, on the one hand, and as you know there are people who would like to get the President out of the 201 process, period. We were concerned that that was the intention of the bill, and for that reason we would continue to conclude that the executive branch without the direction of the President probably isn't going to work very well in this kind of a situation.

Senator HEINZ. My best guess is that the President has appointed people as Secretaries of the Cabinet who are loyal to him, and it should not be a problem as this bill is structured.

Just to clarify the record on the way this legislation is intended to work, it is not intended to repeal the existing 201; it is intended to be an election that would be made available in addition to remedies under existing 201.

One thought that had occurred to me in the course of hearings is that it might be desirable to make remedies other than just import relief the principal carrot to offer to an industry in order to adjust. Indeed, such other remedies, although not explicitly stated, are contemplated when in part of the bill we discuss that other specific statutes, statutory changes, regulatory changes, antitrust changes may be submitted on a fast-track procedure. That is an important element of the bill.

Would you find any merit in that kind of a modification of the bill?

Mr. JASINOWSKI. Yes, Mr. Chairman. I think, to the extent you decouple the explicit requirement that the plan be related to the trade actions, you have a lot of beneficial effects. First of all, you keep the trade issue neat and clean. Second, it would be much faster. My own experience again, in the shoe case, is that it takes an awfully long time to get analysis and agreement about the nature of the problems and any industry restructuring. And so I see a big time gap between the plan and any restructuring and the 201 requirements that people have a legitimate right to expect.

So both in terms of having the trade law operate better, and the timing problem, it would seem to me that decoupling these two and putting the restructuring much more on a voluntary basis, although you may still need some "carrot" as you say, I think that most industries that would be in trouble and submit themselves to this kind of cooperation and effort are going to do it, because they basically need to do it. And I do think that the Government ought to look more at this in a positive way rather than a quid-pro-quo: what are the kinds of assistance that the government can provide, either analytical or otherwise, to help this industry think its way through a new kind of response?

Senator HEINZ. It has been my original assumption that the approach taken in S. 849 isn't a cure-all for every kind of industry; it is only likely to be successful where an industry is reasonably capital-intensive—it is not going to help the garment industry, which is highly labor-intensive—and where that industry is subject to a substantial amount of import competition.

The legislation makes escape clause protection easier to get and justifiable without repealing existing law because we attempt to capture through the adjustment plan benefits for this country as a whole, and not necessarily for the workers or the stockholders or the management of the other companies in the industry that is being benefited. Indeed, your comment that 201 represents assistance to one sector and costs to others was very much in the back of my mind when I wrote that part of the bill.

Do you think it is a good idea to try and capture the benefits of the protection that Government affords an industry, and only Government can afford industry import protection. Or is that a mistake?

Mr. JASINOWSKI. Well, I think that the economists would tell you that that's a good idea, and there is a whole theoretical set of reasons why you maximize the country's welfare by a process which would try to capture part of what is given in benefits to the industry, or force them to move in a direction which would be more efficient.

I think the difficulty is that the politics of the situation and the problems that these industries face are such that that's not very realistic, and you are not going to get cooperation among the parties unless this is something they really feel inclined and want to do. And to the extent that there is some aspect of coercion here, which I know is done in the European case, and successfully, I do think at least in this country at this time it is going to be very difficult to get the parties to agree.

I think that if tripartite activities are to work in the foreseeable future in this country in a productive way, they are going to have to be largely on a volunteer basis where people come to the table because they want to come to the table. That's what happened in the steel tripartite activity, that's what happened in the previous shoe case. It's not going to happen in very many cases, and we ought not to try to force it. If tripartism is going to work, it will work because the players want it to work.

Senator HEINZ. Let me try to take a theoretical case assuming S. 849 is on the books. You have an industry which gets its import relief under section 201, and the resulting benefit of a stabilized and usually somewhat higher price level. That higher price level, unless it is siphoned off by higher wage rates or higher energy prices or some other action, comes down to the bottom line, and it can either be distributed to stockholders in the form of dividends, or it can be reinvested in the company in the form of modernization of some kind.

One of the concerns I think many of us have about the existing 201 is that there is very little guarantee that the money is going to flow past all the other places in the corporate and labor structure that will allow that money to be employed for the benefit of making the companies in that industry more competitive. Is that a real fear? Do you feel that 201 has worked well, and on a voluntary basis companies and industries have indeed taken advantage in a positive sense of the opportunity to become more competitive? Or is the record that more often than not it just buys them a little time during which nobody tries to get thinner and into better shape; the stockholders and the workers maintain what they've got and maybe take a little bit more here or there? What is your view of that?

Mr. Jasinowski. Mr. Chairman, I think there are two comments. One is, if we were debating a $20 billion tax break for corporations, I would be more inclined to conclude that we ought to be very sure about the results we get. We are really talking about small potatoes with respect to 201 from either an economic point of view or in terms of the numbers of cases that apply for and are granted this provision.

I would argue in fact that the 201 provision has been much too difficult to receive, and in general what we ought to do is to do all we can to streamline that process without making it a giveaway that would invite the charge of protectionism.

Now, having said that, it seems to me that Government always ought to try to get the most it can out of every buck, and I see no reason why the Government in the granting of 201 can't tell the industry that it has some expectations that it is going to have to perform better in the next several years, and don't come back to us again unless you do, and to be willing to work with the industry to help in that activity; whether or not it is in marketing, production, technology, I think there is a role in which the Government can play a constructive and positive set of actions. But the notion of tying it formally into a quid-pro-quo requiring plans and timetables, and all the rest of that, I think is where you run into the seeds of the demise of the idea. A consentual process must have a certain amount of straight talk between the partners and requests for actions, but to require all of this really does get into the area, I think, of excessive bureaucratization.

Senator Heinz. Coming back to the beginning of your statement, you identify the four causes of industrial decline as the nature of the recessionary periods, their rapidity, and also, ironically, their length; second, the boom-and-bust nature of American performance in international markets; the lowering of GNP; and some management failure. What you have described in a sense are a series of factors that have caused American corporations—and it is sometimes difficult to understand which is cause and which is effect—to choose higher hurdle rates of return, shorter periods in which to get their money back from an investment, a higher cost of capital which drives those hurdle rates of return up, uncertainties about the world, the $200 billion deficit we face or the next oil shock 4 or

5 years down the road. All of these contribute to a lot of instability. They also contribute to investor uncertainty.

The bottom line is, if other countries such as Japan are able to say to their corporate community "We will do some things such as interest rate manipulation to insulate you from this increasingly unpredictable world out there," what is our response if we want to lower those investment thresholds, hurdle rates of return, and real interest rates?

Obviously we all know we ought to bring down the deficit, but beyond that is there more to solving the problem?

Mr. JASINOWSKI. Well, Mr. Chairman, first of all I think that your summary of the nature of the problem is as good a summary as I have heard, and I would like to just subscribe to it.

There really is no substitute for bringing down the deficit; so, since you have heard that many times before——

Senator HEINZ. There apparently is no way at this time to bring it down, irrespective of the merits of so doing.

Mr. JASINOWSKI. Let me make one point that I think is a contribution to that, which is to say that I think we really do have to look at this whole question of spreading the consumption tax base as we move out into the future, and we have to look at this whole question of indexing. But since that is not the purpose of your hearing today, I will accept the notion that you have heard that before.

Senator HEINZ. In just about every hearing that we have held.

Mr. JASINOWSKI. I think, in addition, it is my own view and I think increasingly the view of others that monetary policy ought to be more flexible, as it has been for the last 6 months, based on attention to monetary aggregates on an annual basis and for longer periods, but to some attention to interest rates in the shorter run so there is more stability, as there has been.

Most foreign countries have multiple targets for their monetary policy. We ought to, too. We ought not to regard monetarism as the only aspect for guiding monetary policy; on the other hand, we ought not to go back to this flawed Keynesian notion that you focus entirely on interest rates as we did in 1978, and which got us into a lot of trouble. We ought to learn from those two and be more flexible.

Second, I do think that there is room to explore an exchange rate policy in this country, and that has positive ramifications for both domestic interest rates and the trade balance, and that involves everything from looking more carefully at targeted zone concepts to coordination with our allies and bringing down the deficits.

And I think that continued efforts at productivity in order to keep down the rate of inflation so that interest rates will continue to fall is the third category. That's the best I can do, Mr. Chairman, when you limit me from saying more about the deficit, but I think those other three are contributions.

Senator HEINZ. Mr. Jasinowski, thank you very much. It is a pleasure to have you back.

Mr. JASINOWSKI. Thank you, Mr. Chairman.

Senator HEINZ. Our next witness is Dr. Fredric Raines, professor of economics from Washington University, St. Louis, Mo.

Dr. Raines.

STATEMENT OF FREDRIC A. RAINES, PH. D., PROFESSOR OF ECONOMICS, WASHINGTON UNIVERSITY, ST. LOUIS, MO.

Dr. RAINES. I want to thank you, Senator Heinz, for the opportunity to talk before this hearing.

I have submitted a statement to the subcommittee.

Senator HEINZ. Without objection, the entire statement that I have will be a part of the record, Dr. Raines.

Dr. RAINES. And some of the references I will make will be to tables of figures in the statement. I simply have not got the time to go over the detail in my brief remarks here, but I will try to summarize what the statement says.

I think the point of my coming before you this morning is threefold:

First, it is to emphasize the strong technological link between growth in technology as reflected in R&D activity and growth of output in employment in industries, not only in the basic manufacturing, industrial sector, but in a number of other areas.

The second thing is to offer you some tentative projections of employment and output in basic industries that developed from this analysis.

Third, I would like to emphasize the fact of the very heavy involvement of the Federal Government in R&D activity. As far as it is possible to tell, the Federal Government accounts for over half of the funding of R&D activity in basic and applied research and development in the United States, and therefore is in a position to strongly influence the directions of technology.

Now, the initial puzzle that one sees when one looks at the factors influencing technology, and particularly the developments of recent years, is summarized in table 1 of the statement. There I have divided the private nonfarm economy into three sectors, industrial, industrial services, and trade and services. What they show is three rather different descriptions of economic health. The industrial sector has been sort of slowly declining—the industrial sector including manufacturing, mining, and construction. And as we see, the decline is from the 1953 to 1965 period a relatively high growth in productivity and output, to the 1965 to 1979 period, a slowdown. And within that, the 1973 to 1979 period, the post-oil-embargo period, a further slowdown.

In contrast, the industrial services sector, including transportation, communication, utilities, finance, insurance, and wholesale trade, as I have defined it, continues to have fairly robust health. Whether one is looking at the earlier period, the overall later period of 1965 to 1979, or even the 1973 to 1979 period, their performance has been relatively impressive.

A third description is given by the "Trade and Services," in which what we have had is strong growth in employment but at the cost of zero or even slightly negative growth in productivity.

What has happened is that the retail trade and services areas, have generated the majority of jobs in recent years. But if you start examining the figures you find out that these are typically low-wage jobs offering only part-time employment, in areas of low-productivity growth, hence potentially low-wage increases. So economic salvation does not lie in expanded trade and services jobs.

Now, I became interested in the role of technology in this picture. For instance, referring back to the testimony of Dr. Jasinowski, he mentioned four causes for the slowdown in our economics in recent years. At least two of them I think are related: slow growth of potential output, and relatively increased foreign competition, are related to the state of technology and the overall health in that area.

The approach, which is described in more detail in the paper, is to attempt to develop measures of technology based on R&D expenditures, cumulated into constant-dollar R&D stocks. And three such measures of stocks of technology are described in table 2. What these figures show is a rather pervasive slowdown in growth of R&D stocks over the 1956–79 period not only in the defense and defense-related industries but throughout the nine manufacturing industries shown in table 2. The indicated slowdown in the rate of growth of the technology occurs in both company funded R&D and in direct federally funded R&D, although the company funded R&D stocks appear to have declined by a much smaller extent.

The Federal spillover stock of technology concept in the last column refers to federally funded research outside of industry, principally at universities, federally funded research and development centers, and inhouse government, that I have constructed by alining these R&D expenditures to the fields of science interests of the different industries shown.

Senator Heinz. Dr. Raines, just so I am positive I understand your numbers, in the first line of, say, chemicals, 1956–62 it says 6.4 percent, which is the annual percentage change in company funded R&D as a percentage of total R&D effort.

Dr. Raines. No. It is the annual percentage change in the stock of company funded R&D where I have created the stock by cumulating annual expenditures on R&D, assuming an obsolescence rate that differs between basic research, applied research, and development, and averages about 5 percent for the three.

Senator Heinz. In the case of that first line, again, where it says 21.4 percent direct Federal funding and 6.4 percent company-funded—that is to say there was an increase in Federal R&D of over 20 percent——

Dr. Raines. Per year, during that period. The figures show a very strong growth rate of Government funding of R&D during earlier periods. The precise numbers I would suggest are somewhat sensitive to the assumptions underlying the development of the capital stock. But the relative orders of magnitude would not change under a fairly wide range of alternative assumptions. And what they show is that in the post-Sputnik era there was a very strong acceleration of R&D expenditures that was fairly pervasive across the basic industries.

Now, I have used estimated statistical relationships using there R&D measure together with controls for other types of trend growth and for cyclical fluctuations, to make projections of output and employment under two different growth scenarios for the overall economy—a high growth scenario and a low growth scenario—for the 10 basic manufacturing industries. These are presented in table 3. What they suggest are the following:

That in a number of cases, basic industries will not only remain basic but will increase in importance relative to the overall economy. I would include in that list chemicals, rubber and plastic products, machinery, electrical equipment, and professional and scientific instruments.

Conversely, particularly under the low-growth scenario—a 2.4-percent overall growth rate taken to be consistent with Bureau of Labor Statistics, projections reported in table 4—there are some industries that are not going to fare well, and could be in real trouble. Thus, for instance, the figures suggest that motor vehicles and primary metals—the latter including of course steel but also the nonferrous metals—could potentially lose 340,000 jobs by 1990.

A third point that can be gained from this analysis is that there appears to be a fairly large elasticity of response of these industries to different levels of R&D funding. Under the low-growth scenario I have used the 1970's rate of growth of R&D funding, and under the high-growth scenario I assumed the 1960's rate of growth of R&D funding. When combined with the low and high overall growth rate assumptions the effects are seen to be fairly substantial. For instance, motor vehicles goes from essentially no growth to a 5 percent per year rate of growth, depending on which assumption is used. And several of the other industries are similarly affected.

In conclusion, there is a growing body of evidence that suggests a close link due to both direct and indirect effects on industry, between R&D activity and growth of industrial output and productivity, not only basic manufacturing but also in the industrial services. And I think eventually this will hold true for the pure service sector.

I think that it is time for the Government, being the principal sponsor and principal funder of R&D activity, to rationalize its behavior by taking a close look at where this funding is going, what the implications are for all sectors of the economy, and how R&D funding could be used to smooth the transition process to this emerging high tech economy we all hear about. And I think there is no way the Government can avoid that responsibility, in view of its heavy activity in this area. So this presents an opportunity as well as a responsibility.

Thank you.

[The prepared statement of Fredric Raines follows:]

OUTPUT AND EMPLOYMENT TRENDS IN BASIC MANUFACTURING INDUSTRIES: THE ROLE OF R & D

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Paper prepared for the Hearings of the United States Senate Subcommittee on Economic Growth, Employment and Revenue Sharing of the Committee on Finance, October 3, Washington, D.C.

I am indebted to Claudia Campbell and Arbi Ben Abdallah for statistical and computer assistance in connection with research on this paper.

Overview and Background

It has been asserted that the U.S. economy faces a major dilemma.

Full scale implementation of currently evolving technology will make our products more attractive domestically and more competitive internationally. Yet this seemingly cannot be accomplished without severe industrial dislocations and a marked change in the skill requirements of our labor force.

Alternatively, a marked slowdown in the development and implementation of new technologies would ease the transition pains. Yet the adoption of such a course will in all likelihood accelerate the rate at which shares of our domestic and foreign markets are lost to other industrialized and to developing nations. And it would mean abandoning our historic role of technological leadership, a role that is currently being sharply challenged.

Thus stated, our choices would appear to be between excessive unemployment due to rapid technological progress or excessive unemployment due to slow economic growth.

It is somewhat ironic that the wave of concern about economic disruption due to excessively rapid technological advances spawned by the microprocessor and related developments has overtaken an equally strong wave of concern about the stagnating nature of the U.S. economy. Recent economic history looks bleak, while the present and the future appear threatening. In fact, both sets of concerns have merit, and I would argue that the past decade-and-a-half of meager economic growth, high unemployment, and frequent recession have left the economy less able to cope with technological change. As a nation we have allowed our stocks of physical and human capital together with the facilities for creating them to deteriorate, thus diminishing funds needed for private investment and skills needed to put this investment to work. And governments at all levels, strapped for resources or heavily in debt, are not in a good position to help out.

The evolution of the economy with regard to ouput, employment, and productivity growth from 1953 to 1979 is documented in Table 1 for the three major sectors that comprise the total private nonfarm economy. The slowdown in economic growth and productivity is evident in the performance of all three sectors, although there are marked differences among them. The industrial sector, including manufacturing, mining and construction has had the slowest rate of growth over this entire period and during each subperiod, while the retail trade and services sector has experienced substantial output growth but meager gains in productivity. In contrast, the sector I have labelled industrial services, consisting of communication, transportation, utilities, finance, insurance and wholesale trade looks as if it belongs to a different economy. Output growth has been buoyant throughout, and even though productivity growth slowed from a rapid 3.6 percent per year during 1953-65 to a more modest 2.0 percent since then, the performance of this sector has been consistently impressive.

In a previous piece of research[1] I attempted to determine whether patterns of spending for research and development (R & D), the presumptive source of much productivity growth, could explain the facts in Table 1. The vast majority of industrial R & D is conducted by manufacturing industries, so that while this fact

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[1] "Channels of R & D Influence on Sectoral Productivity," 1981.

Table 1

Statistical Growth Profiles of the Industrial, Industrial Services, and Trade and Services Sectors 1953-79

Growth Rates	Sector 1 Industrial	Sector 2 Industrial Services	Sector 3 Trade and Services
		(Percent per Year)	
1953-65:			
Output:	3.3	4.4	3.9
Employment:	0.3	0.8	2.6
Hours:	0.4	0.8	2.2
Output per Hour:	2.9	3.6	1.8
1965-79:			
Output:	2.5	4.3	3.7
Employment:	1.4	2.6	3.5
Hours:	1.1	2.2	2.8
Output per Hour:	1.3	2.0	1.0
1965-73:			
Output:	2.9	4.5	4.5
Employment:	1.5	2.7	3.3
Hours:	1.2	2.4	2.7
Output per Hour:	1.6	2.0	1.7
1973-79:			
Output:	1.9	4.0	2.7
Employment:	1.2	2.4	3.7
Hours:	1.0	2.0	2.8
Output per Hour:	0.9	2.0	-0.1

might explain the relatively poorer showing in terms of productivity growth for trade and services, it would stand in contradiction to the stronger showing by industrial services. In fact, this contradiction proved to be more apparent than real. The industrial services sector is a heavy purchaser of inputs, particularly capital inputs, from the industrial sector, and it is through these purchases of improved materials and capital goods and the information flows that surround these transaction flows that much new technology is transmitted. One approach that has been used to capture this transmission process is to assume that the R & D conducted by the supplying industries is available to the purchasing industries in proportion to the relative magnitude of the transactions. One can then construct a set of weights to apply to the R & D conducted by the supplying industries. The resulting R & D figures constitute a "material input" or a "capital input" R & D flow to the purchasing industries.

There is yet another major source of R & D knowledge available to industries. This is the R & D conducted outside of industry, in universities and federally funded research centers, for example. Tracking this flow is even more difficult, but in a recent paper I attempted to do so.[2] The National Science Foundation provides some information on the distribution of basic research spending by field of science. These data are identified for industry and non-industry classifications. Using a weighting procedure similar to that used in the construction of capital or material input R & D, one can estimate the flow of current R & D spending outside of industry that is relevant to a particular industry based on their own distribution of spending on basic research. I have cumulated the federally funded portion of these annual R & D flows into R & D stocks for nine manufacturing industries that account for almost all basic research done by industry. Average annual growth rates of these stocks for fours subperiods from 1956-79 are shown in Table 2, identified as "Federal Spillover." The data show a dramatic decline over time in the cumulative growth rate of federally funded research in all of the industries shown. Table 2 also reveals a rapid decline in the cumulative growth of R & D stocks resulting from direct federal funding of industry R & D. In contrast, R & D stocks based on industry's own funding show much less of a slowdown in growth rate, with two industries, machinery and instruments, currently showing significantly higher rates of growth than the rest.

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[2] "Federally Funded Scientific Knowledge Spillovers on Industrial Productivity," March 1983.

While the numbers in Table 2 are based on an unrefined proxy for accumulated technical knowledge, and should be interpreted at best as reflecting relative rankings, the data do suggest two general propositions concerning federally funded R & D.

1. The slowdown in federal funding of R & D, often thought to be more or less limited to the defense and space industries and primarily to development expenditures, appears quite pervasive across industry, and affects basic and applied research as much as development.

2. The time period from the launching of Sputnik to the landing on the moon was seemingly characterized by a much higher commitment to expanding technical knowledge on the part of the Federal Government than the period since then.

Output and Labor Input Projections for Ten Basic Industries

In order to gain some insight into the potential consequences of alternative growth paths for stocks of R & D knowledge on projected output and employment in basic manufacturing industries, I have estimated a statistical model of output and productivity from which such projections can be extracted. The model was estimated for ten 2-digit manufacturing industries for which NSF data on R & D spending is available. These include eight of the nine industries shown on Table 2 (excluding other transportation equipment with its large but highly specialized R & D spending for military hardware), plus rubber and plastic products and fabricated metals. Together these industries account for the vast majority of non-defense industrial R & D spending. They also produce virtually all, and purchase a large share, of domestically produced capital equipment. The economic viability of these industries should therefore be significantly affected both by their own R & D spending and by R & D expenditures in industries from whom they purchase capital equipment—the latter underlying the capital input R & D concept discussed earlier.

Foregoing a technical discussion, the procedure used was essentially as follows. Two measures of industry productivity, year-over-year changes in output per hour and output per employee, were statistically related to changes in the ratio of industry capital stock per hour or per employee, and to changes in the industry's effective stocks of own and capital input R & D spending. To generate these R & D stocks, annual R & D spending since 1956, either the industry's own, or a weighted average of R & D spending by industries supplying capital goods, were cumulated, assuming an obsolescence factor of five percent per year. The initial values of the R & D stocks were computed by projecting backwards earlier growth rates in R & D spending. In order to capture more of the lag between R & D spending and actual changes in productivity, the R & D "effective" stock measures used in the statistical analysis were defined as weighted averages of stock values over a five year period. Finally, in order to take account of cyclical fluctuations in productivity, the Federal Reserve Board's index of capacity utilization in manufacturing was introduced as an explanatory variable.

Productivity relationships broadly similar to the one just described have been estimated by a number of researchers. They have met with mixed success. This is not the appropriate forum to dicuss technical problems, save for one consideration.

Table 2

Average Annual Percent Changes in Alternative Measures of R & D Stock

Manufacturing Industry	Time Period	Company Funded (Total R&D)	Direct Federal Funded (Total R&D)	Federal Spillover (Research)
Chemicals	1956–62	6.4	21.4%	20.3%
	62–68	5.9	7.8	15.9
	68–73	4.2	2.1	7.0
	73–79	3.9	1.9	5.5
Petroleum	1956–62	6.4	11.5	24.7
	62–68	5.9	9.7	18.7
	68–73	4.2	-1.0	9.7
	73–79	3.9	7.0	5.6
Stone, Clay and Glass	1956–62	6.3	12.3	24.0
	62–68	5.4	3.8	17.1
	68–73	4.0	12.5	8.3
	73–79	3.3	4.9	6.0
Primary Metals	1956–62	11.2	17.3	24.7
	62–68	7.5	3.5	18.2
	68–73	4.1	1.2	8.0
	73–79	4.0	3.6	6.1
Machinery	1956–62	10.2	9.1	23.9
	62–68	8.5	2.5	16.5
	68–73	7.7	1.4	6.7
	73–79	7.0	1.9	5.0
Electrical Equipment	1956–62	7.2	9.2	24.0
	62–68	7.5	6.1	17.2
	68–73	6.1	2.6	8.1
	73–79	4.0	0.6	4.8
Motor Vehicles	1956–52	4.9	5.7	24.0
	62–68	4.8	4.9	17.6
	68–73	4.9	1.4	5.3
	73–79	4.6	1.2	4.8
Other Transportation Equipment	1956–62	6.0	7.6	24.3
	62–68	9.4	6.3	20.7
	68–73	5.3	0.7	6.9
	73–79	2.8	-0.3	4.9
Professional, Scientific Instruments	1956–62	6.4	7.9	22.3
	62–68	7.2	4.3	16.8
	68–73	8.2	2.6	6.9
	73–79	7.6	-0.2	3.4

There is an urgent need for improved and more detailed data. This applies particularly to R & D data, but also to data on industry output and total hours. Indeed, the government no longer publishes much of the data underlying this and similar studies. In my view, the results to date and the potential for such research to contribute to our understanding of the economy and ultimately to economic policy, justify increased spending on data collection and refinement in these areas.

Even a well specified productivity relationship for an industry, however, does not determine whether a given change in productivity will take the form of an increase in output, a reduction in labor input, or some combination of the two. I therefore estimated a separate output equation for each of the ten industries. Since output in a given industry depends heavily on what is happening in the rest of the economy, the output measure I used was the change in the ratio of industry to total private domestic output. This was also specified as dependent on an industry's stocks of own and capital input R & D. Whether the outcome of spending is a new or improved product, or a less expensive means of producing an existing product, the net effect should be that industry demand increases. Changes in capacity utilitzation were included as a control variable on the grounds that a particular industry may be more or less responsive than total output to cyclical fluctuations. Also explored was the possibility that an industry may be affected by a trend factor unrelated to movements in R & D stocks.

The results of this analysis indicate that R & D spending is a significant, distinct factor explaining productivity movements in most of the industries investigated. The relationship seems particularly strong in machinery, electrical equipment, rubber, chemicals, and petroleum. The influence of R & D on relative changes in output has so far proved weaker, with instruments, electrical equipment, rubber and chemicals showing the strongest associations. Unfortunately, it proved extremely difficult to distinguish statistically the separate effects of own from capital input R & D on productivity and output. As an expedient therefore to enchance statistical reliability, the projections are based on equations in which only one of the stocks is included for each idustry. I would emphasize, however, that these results are preliminary; they reflect research in progress, and I anticipate that a number of refinements will be made.

With the caveat therefore that projections based on the above model should be interpreted as indicative rather than precise, Table 3 presents projections based on the industry productivity and output equations of average annual changes in output, employment, and total hours for the period from 1979 to 1990, together with the total change in employment in absolute and percentage terms over this period. In order to compute these estimates, assumptions had to be made about the growth rates of total output, the capital stock and own and capital input stocks in each industry. Two alternatives were assumed for total output, a 2.4 percent and a 3.8 percent average annual rate of increase, labelled low and growth respectively. The growth rates assumed for industry capital stocks were derived from the historic relative growth rates for output and capital prevailing in each industry. Thus, the projected industry growth rate for output determined the rate of capital formation in that industry. For the R & D stocks, I assumed high and low growth rates equal to that occurring in the decade of the 1960's and the 1970's respectively.

The output growth rates assumed are those implicit in the very extensive set projections recently completed by the Bureau of Labor Statistics.[3] The BLS projections are based on their very elaborate macroeconomic model of the U.S. economy, the results of which are used in conjunction with industry input-output

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[3] Reported in Economic Projections to 1990, BLS Bulletin 2121, March 1982.

Table 3

Projected Growth in Output, Employment, and Total Hours, 1979-90
Based on R & D Model of Output and Productivity Changes

		Average Annual Percent Change			Total Employment Change	
Industry		Output	Hours	Employment	Percent	Number (1000's)
Chemicals	low growth	3.9	1.5	1.6	18.6	207
	high growth	6.8	2.2	2.4	29.8	332
Petroleum	low growth	1.0	-2.3	-2.2	-21.8	-46
	high growth	3.5	-1.1	-1.1	-11.8	-25
Rubber and Plastics	low growth	4.8	2.1	2.2	26.7	209
	high growth	7.1	3.3	3.5	46.5	363
Stone, Clay and Glass	low growth	2.0	0.3	0.3	2.8	20
	high growth	3.3	0.7	0.7	8.0	58
Primary Metals	low growth	0.3	-1.1	-1.1	-11.6	-152
	high growth	2.9	0.7	0.6	6.6	86
Fabricated Metals	low growth	1.8	0.8	0.8	8.6	139
	high growth	2.8	1.3	1.3	15.6	253
Machinery	low growth	2.9	1.4	1.4	17.0	431
	high growth	4.5	2.1	2.2	26.8	678
Electrical Equipment	low growth	4.0	1.4	1.4	18.4	410
	high growth	6.7	2.0	2.0	24.6	547
Motor Vehicles	low growth	0.2	-1.8	-1.9	-19.0	-190
	high growth	5.0	1.9	1.8	22.3	222
Instruments	low growth	3.9	1.5	1.5	17.9	108
	high growth	5.7	2.7	2.7	38.3	231

tables, occupation by industry distributions, and special industry studies to generate very detailed output and employment projections. As a basis for comparison, Table 4 presents the same set of output, hours and employment projections as Table 3, but based entirely on the BLS study.

Several points can be made in connection with the results shown in Table 3. First, the low and high growth scenarios show much greater disparity for several industries than that assumed for the overall economy. Motor vehicles, for instance, ranges from a low 0.2 percent to a high 5.0 percent rate of increase. This is due to the estimated strong responsiveness of output to R & D stock in that industry. Second, the output projections suggest that some industries can anticipate strong output growth even if the overall economy is fairly slack. Compare, for instance, the low and high growth rates for the chemical, electrical equipment, and instruments industries with that of primary metals. Somewhat surprising, and possibly a statistical artifact, is the rapid growth projected for the rubber and plastic products industry. This industry has the second highest computed rate of growth of own R & D stock, and the third highest estimated responsiveness of productivity to growth in R & D stock. Growth in some industries is projected to be hindered by a strong negative time trend apart from the trend growth in capital and R & D stocks. The estimation process, without any coaching from the principal investigator, identified three such industries: petroleum, primary metals, and motor vehicles.

Finally, note may be taken of the projected changes in employment. Compounded to 1990, the numbers in Table 3 imply rather large rearrangements of the industrial labor force. Under the high growth scenario, four industries—machinery, electrical equipment, chemicals, and rubber and plastics—are projected to increase employment by nearly two million workers, while the remaining six industries could provide substantially less than a million new jobs. Much more worrisome is the finding that under the low growth scenario—but still a higher overall growth rate for real

Table 4
BLS Projected Growth in Output, Employment, and Total Hours, 1979-90

		Average Annual Percent Change			Total Employment Change	
Industry		Output	Hours	Employment	Percent	Number (1000's)
Chemicals	low growth	2.9	0.9	1.0	10.5	127
	high growth	4.0	1.3	1.5	14.9	199
Petroleum	low growth	-1.6	-1.1	-1.2	-11.3	-26
	high growth	-0.5	-0.4	-0.4	-4.5	-8
Rubber and Plastics	low growth	3.4	1.9	1.9	22.9	183
	high growth	4.9	2.3	2.1	28.1	198
Stone, Clay and Glass	low growth	1.6	0.6	0.5	6.5	41
	high growth	2.7	1.1	1.0	13.0	86
Primary Metals	low growth	1.9	0.7	0.7	8.1	99
	high growth	3.4	1.1	0.9	13.0	128
Fabricated Metals	low growth	1.8	1.2	1.2	14.3	233
	high growth	3.2	2.0	1.9	24.4	381
Machinery	low growth	3.8	2.0	1.8	23.9	564
	high growth	6.1	3.5	3.3	43.8	1068
Electrical Equipment	low growth	2.9	1.5	1.5	18.0	390
	high growth	4.8	2.3	2.2	29.1	613
Motor Vehicles	low growth	1.8	-0.6	-0.7	-6.9	-74
	high growth	4.1	1.0	0.5	11.0	53
Instruments	low growth	3.3	1.6	1.4	19.6	101
	high growth	5.3	3.0	2.8	39.0	215

output than we have experienced over the past several years—two industries, primary metals and motor vehicles, are projected to reduce employment by nearly 350,000 workers.[4]

Conclusion

My principal aim has been to indicate the potentially key role that the accumulation of technical knowledge as reflected on R & D spending has for economic growth and the creation or elimination of jobs. I have attempted to do this by pointing out and giving quantitative measure to the direct and some of the indirect ways by which new technology courses through the economy. Given quantitative measure, the impact of technology on economic activity can at least be broadly charted. The projections of employment and output changes presented which were derived from an econometric model explicitly incorporating R & D, while tentative and subject to revision, suggest that knowledge useful for economic policy making can be obtained from such an approach. These projections, for instance, reaffirm our concern over the future of the primary metal and motor vehicle industries, while implying that certain basic manufacturing industries such as machinery and electrical equipment will not only remain basic but will increase in importance over the next decade. Such information would surely be useful to a policymaker attempting to determine for instance the orientation of government sponsored retraining programs. Given refinements in statistical methodology, and more importantly because it is currently the constraining factor, given more complete and detailed information on the purposes of R & D expenditures at all levels, it should be possible to anticipate the impact of technological change with substantially increased precision.

There is a further point that I believe is most pertinent to these hearings.

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[4] These projections abstract from cyclical effects. Under both the low and the high growth scenario, capacity utilization in manufacturing is assumed to increase by 0.2 percent per year from its 1979 level of 85.7 percent.

The Federal Government is not merely an idle spectator in the R & D game. Federal funding accounts for about one third of industrial R & D expenditures and for the vast majority of expenditures at other levels, particularly in the area of basic research. The Federal Government is therefore in a position to heavily influence the future directions of technology. Admittedly, the Federal Government has been primarily concerned with armaments technology. But the time has surely arrived for policy makers to take a close look at the implications of the magnitudes and directions of federal R & D spending in all of the component parts of our economic structure. Moveover, this country is confronted with a number of social problems, such as a decaying infrastructure, a public educatonal system that has fallen short of its goals, and a growing imbalance between job skills and worker skills, that are also major impediments to growth. Here are areas where federally encouraged research can help enlist technology to beneficial effect for economic growth as well as for social cohesion.

Senator HEINZ. Dr. Raines, I want to thank you for some very careful analytical work that is extremely valuable. It tends to support a lot of anecdotal evidence. One set of such evidence was generated by the Washington Post in a series on all the inventions that have been generated here in the United States in technological innovations, high-tech, if you will, over the last 10 years, and how very little of it was being used in the United States relative to that being used elsewhere, particularly in a country like Japan.

Second, it was interesting to me that in the prepared remarks of Mr. Mendelowitz, he indicated that the Japanese focus rather specifically on the dissemination and use of technological development. He pointed out that it is not so much whether you invent something—that is a better mousetrap, but whether you actually put the mousetrap to work—and the Japanese apparently have a system of encouraging through tax credits the dissemination of new technology.

What do you suggest we do to encourage a wider use of new technology? We have investment tax credits; we have supplanted an accelerated depreciation range with ACRS. What should we do now?

Dr. RAINES. I was rather disappointed, at least in the initial stages, at the effects of the tax reductions, the accelerated depreciation. Seemingly, they did not have the intended effect of stimulating new investment, at least to the extent that was hoped for, in the early stages. Now, this may have been the result of the extensive recession at that time; but what was happening is that released tax money was buying old capital and not producing new capital.

I think the R&D the dissemination process is extremely important, and I think that it will lend itself more readily to certain industries, obviously, than others, depending on whether an industry has a few large firms or a large number of small firms. To a certain extent the latter situation has characterized the machinery industry and has been in the past something of a problem in terms of the propagation of technology.

I believe that one of the first things to do is to get a better idea of the indirect uses and implications of R&D activity. The National Science Foundation, to whom I am beholden for all the R&D figures that I am able to get, identifies technology and R&D activity on the basis of field of science. I think that what we haven't been clear enough about is that these fields of science affect a lot more than a narrow list of industries, but overlap and spread into a number of industries.

I think we have to learn more about the process. I think that there can be increased cooperation between Government, which as I say is the major funder of R&D, and industry. But of course there is another problem in that the rapid propagation of technological change is looked upon as a strong threat by workers who have seniority, extended tenure in industries, and now fear for their jobs.

I am not suggesting the path, in fact I think it would be disastrous in the long run, of attempting to block the implementation of new technology, of attempting to raise trade barriers. But I think that hand-in-hand with the propagation of this technology what is needed is a responsible policy for finding alternative employment, perhaps a movement of funds, to allow workers to move for retraining as necessary. My results suggest that we have some basic manufacturing industries like machinery and electrical equipment that will be doing rather well in the coming decade, and perhaps can take up some of the employment slack released, say, by primary metals and motor vehicles.

Senator HEINZ. If your analysis of the coordination between research and development, and industrial competitiveness, and employment is correct, in table 3 you are talking about the creation or destruction under alternative scenarios of approximately 1 million jobs. How confident are you that a stepped-up research and development program both by industry and through direct Federal investment would really bring about the kinds of dramatic improvments here that your analysis suggests might be possible?

Dr. RAINES. Obviously I have not included in my brief presentation a number of qualifications that underlie such an analysis. I am only one of a number of researchers who have looked into this area.

The general tendency, or the isolated significance of R&D activity on productivity, and to a lesser extent on output growth, I think is well established. That is beyond question. But what you are asking is—this 6.8 figure for chemical growth really 6.8, or is it 7 or 6.6.

Senator HEINZ. I am not so much interested in whether you are going to hit or miss the mark by 5 or 10 percent; I am asking is there much chance of your being off the mark by 50 percent on the low side?

Dr. RAINES. I think that that would be the upper end of the range, of probable error.

Let me point out one additional table that I included in the study, table 4, which has the same set of industries, the same assumed overall growth rates, but the numbers are based on a Bureau of Labor Statistics study. You can compare table 3 and table 4. BLS has a very elaborate macro model, the results of which are distributed to industries on the basis of an input-output matrix and distributed to occupations on the basis of still other statistics. And then they have their industry experts look things over. They don't formally introduce R&D into the model, so in that sense there is a difference.

But I think if you compare the numbers, you will see a lot of individual differences, but you will also see a broad tendency in the same direction. Neither BLS nor the model that I employed holds out really buoyant prospects for primary metals or for motor vehicles, except under very high growth rates; and petroleum for other reasons will have a declining trend. I think that is similar in both studies. Machinery looks bright under both studies, and so does electrical equipment.

So by introducing this table what I am saying is, "Look, here are two studies that are trying to look at the same thing. They differ, but they are broadly similar in conclusions."

Senator **Heinz**. Well, thank you very much, Dr. Raines. We appreciate your testimony. I think drawing attention to the differences between table 4 and table 3 is rather interesting. Since in table 4 there is no specific assumption about R&D, it appears that it is not unreasonable to assume that a significant element in the difference is your assumption about more R&D. Is that correct?

Dr. **Raines**. Yes, but I would qualify it by saying that R&D enters the BLS study in a very indirect fashion, as far as I can tell, and that is that industry experts look over individual industries and put in adjustment factors on the basis of that. But there is no formal attempt to statistically relate, in a econometric model, R&D to output, productivity, controlling for other factors.

Senator **Heinz**. Well, thank you very much.

Dr. **Raines**. Thank you.

Senator **Heinz**. We appreciate your traveling all the way in from St. Louis. Thank you again.

Our next group of witnesses is a panel consisting of Mr. L. L. White, Jr., of Portec, Inc.; Mr. Julian Morris, president of the Automotive Parts and Accessories Association; and Mr. Leonard Seglin, president of the Intercontinental Econonergy Associates, Inc.

Gentlemen, would you please come forward and take your places?

Which of you is Mr. White?

Mr. **White**. I am, Senator.

Senator **Heinz**. Would you please be our first witness?

STATEMENT OF L. L. WHITE, JR., SENIOR VICE PRESIDENT, COMMERCIAL AND GOVERNMENT RELATIONS, PORTEC, INC., OAKBROOK, ILL., ON BEHALF OF RAILWAY PROGRESS INSTITUTE, ALEXANDRIA, VA.

Mr. **White**. Although I am with Portec, Inc., I appear before you as a past chairman and a current governing board member of the Railway Progress Institute, the national association which represents 140 companies which supply almost everything that is required to establish, operate, and maintain a railroad or a rail rapid transit system.

We are part of basic American industry, Mr. Chairman. Our member companies are in trouble. We have found ourselves in increasingly serious trouble for the past 2 years and, as of this moment, we do not foresee any immediate resolution of our problems.

Let me say at the outset that we are grateful for this opportunity to present our views in this forum, surely one of the most significant in this country. Also, Mr. Chairman, we are grateful to you and your subcommittee for creating this opportunity to become aware of the extent of the depression that still grips our member companies.

I do not use the word "depression" recklessly. We are aware that the National Bureau of Economic Research has stated that the end of the recession was discerned last November. No one welcomed that news more than we. But while others are experiencing the resurgence, those members of the Railway Progress Institute who build railway freight cars are experiencing for the second year in a row the fewest orders for freight cars since the Great Depression of the thirties.

For an overview of the situation in which we find ourselves, to present a context, as it were, for these remarks, I wish to draw the subcommittee's attention to the attached table obtained recently from the Mellon Bank.

The table shows the situation in which my industry finds itself. Currently, the railroad supply industry has an unemployment rate of 61.8 percent.

You see that the railroad equipment manufacturers have been the most devastated by economic conditions. The bank has found that the output of railway equipment manufacturers dropped by a staggering 92.41 percent between October 1979 and May 1983. As you see, our output drop is higher than construction equipment, automobiles, and even basic steel.

Let me translate those statistics into more meaningful specific particulars:

The great Pullman Standard carbuilding plants in Butler, Pa., and Bessemer, Ala., formerly the largest in the Nation, are closed—closed since 1981. Additionally, ACF Industries in Huntington, W. Va., and Milton, Pa.—closed. Berwick Forge & Fabricating in Berwick, Pa.—closed. Bethlehem Steel Corp., Johnstown, Pa.—closed. Emons Industries in York, Pa.—closed. Fruit Growers Express in Alexandria, Va.—closed. Greenville Steel Car Corp., Greenville, Pa.—closed. Paccar in Renton, Wash.—closed. North American Car Corporation in Chicago—closed. Richmond Tank Car Co. in Houston—closed.

Mr. Chairman, five of these companies are in your own State of Pennsylvania. Seven other carbuilders, the barometers of our entire industry, are barely operating on a backlog of car orders totaling 3,755 as of September 1. Compare that with a backlog on January 1, 1980, of 119,201, and I think you can understand the depth of our distress.

These are all plants that were at work 2½ and 3 years ago. These closed plants represent tens of thousands of unemployed workers.

Beyond that dismal picture is the fact that some of our member companies have brandnew plants that have been sitting idle for well over 1 year now. These include Griffin Wheel Co.'s new plant at Columbus, Ohio; the new plant of Youngstown Steel Door Co. of Youngstown, Ohio; and Abex Corp. new plant in Johnstown, Pa.

These are some of the specifics that get buried in the broad picture of the national economy, Mr. Chairman.

Even beyond that, however, because of the thousands of freight cars that were idled and stored because of this recession and consequently were not wearing out in service, we railroad suppliers will remain in a depression until railroad traffic increases significantly and remains at a much higher level.

I have not come to ask for sympathy. Nor do I come with a ready answer to the ills that beset the Nation's basic industry. I do not offer a definitive answer in the growing national argument over whether or not the United States should adopt some version of the direct governmental intervention in marketing strategy, product development, capital formation, production levels, employment, and subsidization that we have seen in Japan and Europe.

But I do come here with a hope that from these hearings, Mr. Chairman, will come a unified and enduring basic philosophy—a set of principles, if you will, that will guide the Congress and the people for many years to come.

It is our suggestion, Mr. Chairman, that such an enduring and basic philosophy will include these four basic points:

First, it is American basic industry and not the Federal Government that is the mainspring of the Nation's economy. It is evident to me, and I believe to you, that we have a national consensus on that point. We must have access to capital at prices we can afford. That brings me to the second basic point.

Second, interest rates and inflation must be held as low as possible. Clearly, interest rates reflect the knowledge that our own Government is competing with American industry for the citizens' savings and investment capital. The Federal Government not only can outbid us for capital but the Federal Government must outbid us. Congress absolutely must bring down the Federal deficit and, once that is achieved, hold it down.

Third, American basic industry must know what it can count on over a span of years; and, hence, it follows that the Congress must not keep changing the rules. For example, the Congress last year eliminated the 1985 and 1986 accelerations of depreciation; reduced the basic adjustments for investment tax credits; and, for all intents and purposes, repealed safe harbor leasing. Such sweeping changes of the rules, Mr. Chairman, play havoc with basic industry's capital planning.

Fourth, finally, Mr. Chairman, we ask equal access to economic incentives that the Congress decides upon, particulary the benefits long enacted in the code. The concept of safe harbor leasing was very good, but flaws in its application showed that some adjustment was required. However, virtual elimination of safe harbor leasing was certainly unfortunate.

As you know, Mr. Chairman, your colleague from Minnesota, Senator Durenberger, has introduced legislation which addresses each of the four points I have just outlined. S. 1953, the Work Opportunities and Renewed Competition Act of 1983, would provide all industry with equal access to economic incentives in our tax code and with affordable capital to make immediate investment in new plant, equipment, and technology. It would also reduce injuries suffered by industry due to the tax treatment changes in TEFRA and result in a reduction of the Federal deficit by 1990 due to increased tax revenues. The RPI Executive Committee began consideration of this bill and its companion measure in the House, H.R. 3434, at its meeting in September and will take a position on the bill later this month.

In summary, Mr. Chairman, we are not asking for new incentives but for equal access to existing incentives. We are not asking for more Federal spending but for recognition written into law that basic American industry generates the Nation's wealth and must have access to capital at affordable prices.

We of the Railway Progress Institute, as this testimony has shown, have been struggling with a depression as deep for us as was the Great Depression of the 1930's. Yet we have not come to Congress hat in hand, asking for favored treatment or a handout—only equal incentives.

Thank you.

[The prepared statement of L. L. White, Sr., follows:]

Statement
of
L. L. White, Jr.
Member, Governing Board, and Former Chairman
of the
Railway Progress Institute
and
Senior Vice President
Commercial and Government Relations
Portec, Inc.
before the
Economic Growth, Employment, and Revenue Sharing Subcommittee
of the
Committee on Finance
United States Senate
October 3, 1983

* * * * *

Good morning, Mr. Chairman and members of the Subcommittee. My name is L. L. White, Jr. I am Senior Vice President of Commercial and Government Relations of Portec, Inc., in Oak Brook, Illinois. However, I appear before you as a past Chairman and a current Governing Board member of the Railway Progress Institute, the national association which represents 140 companies which supply almost everything that is required to establish, operate, and maintain a railroad or a rail rapid transit system.

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Emons Industries, Inc., York, Pennsylvania - Closed.
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Greenville Steel Car Corporation, Greenville, Pa. - Closed.
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But I do come here with a hope that from these hearings, Mr. Chairman, will come a unified and enduring basic philosophy -- a set of principles, if you will, that will guide the Congress and the people for many years to come.

It is our suggestion, Mr. Chairman, that such an enduring and basic philosophy will include these four basic points:

(1) It is American basic industry and not the federal government that is the mainspring of the nation's economy. It is evident to me, and I believe to you, that we have a national consensus on that point. We must have access to capital at prices we can afford. That brings me to the second basic point.

(2) Interest rates and inflation must be held as low as possible. Clearly, interest rates reflect the knowledge that our own government is competing with American industry for the citizens' savings and investment capital. The federal government not only can outbid us for capital but the federal government must outbid us. The Congress absolutely must bring down the federal deficit and, once that is achieved, hold it down.

(3) American basic industry must know what it can count on over a span of years; and, hence, it follows that the Congress must not keep changing the rules. For example, the Congress last year eliminated the 1985 and 1986 accelerations of depreciation; reduced the basic adjustments for investment tax credits; and, for all intents and purposes, repealed safe harbor leasing. Such sweeping changes of the rules, Mr. Chairman, play havoc with basic industry's capital planning.

(4) Finally, Mr. Chairman, we ask equal access to economic incentives that the Congress decides upon, particularly the benefits long enacted in the code. The concept of safe harbor leasing was very good, but flaws in its applications showed that some adjustment was required. However, virtual elimination of safe harbor leasing was certainly unfortunate.

As you know, Mr. Chairman, your colleague from Minnesota, Senator Durenberger, has introduced legislation which addresses each of the four points I have just outlined. S. 1593, the Work Opportunities and Renewed Competition Act of 1983, would provide all industry with equal access to economic incentives in our tax code and with affordable capital to make immediate investment in new plant, equipment, and technology. It would also reduce injuries suffered by industry due to the tax treatment changes in TEFRA (the Tax Equity and Fiscal Responsibility Act of 1982) and result in a reduction of the federal deficit by 1990 due to increased tax revenues. The RPI Executive Committee began consideration of this bill and its companion measure in the House, H.R. 3434, at its meeting in September and will take a position on the bill later this month.

In summary, Mr. Chairman, we are not asking for new incentives but for equal access to existing incentives. We are not asking for more federal spending but for recognition written into law that basic American industry generates the nation's wealth and must have access to capital at affordable prices.

We of the Railway Progress Institute, as this testimony has shown, have been struggling with a depression as deep for us as was the Great Depression of the 1930's. Yet we have not come to Congress, hat in hand, asking for favored treatment or a handout . . . only equal incentives.

# # #

INDUSTRIES RANKED BY OUTPUT CHANGE

(Source: Mellon Bank, N.A.)

	Month of Latest Data	Peak to Trough Decline	
		Percent	Duration In Months
Railroad Equipment	MAY 1983	-92.41%	42
Basic Steel & Mill Products	MAY 1983	-63.86%	47
Trucks & Buses	MAY 1983	-63.80%	32
Total Autos	JUNE 1983	-61.62%	38
Oil & Gas Drilling	MAY 1983	-56.32%	16
Tires	MAY 1983	-46.40%	41
Household Appliances	MAY 1983	-45.12%	24
Construction & Allied Equipment	MAY 1983	-44.53%	18
Television & Radio Sets	MAY 1983	-41.30%	53
Paints	MAY 1983	-34.77%	48
Shoes	MAY 1983	-30.30%	47
Structural Metal Products	MAY 1983	-30.32%	39
Metalworking Machinery	MAY 1983	-29.32%	34
Agricultural Chemicals	MAY 1983	-29.10%	15
Basic Chemicals	MAY 1983	-26.55%	32

Industry Peak: The highest value from January 1978 to the latest month.
Industry Trough: The lowest value since June 1981.

RAILWAY PROGRESS INSTITUTE

WILLIAM S. HANSEN, CHAIRMAN • JAMES C. O'HARA, VICE CHAIRMAN • ROBERT A. MATTHEWS, PRESIDENT

Senator John Heinz
Chairman
Senate Finance Subcommittee on
Economic Growth, Employment
and Revenue Sharing
SD 219 Dirksen Senate Office Building
Washington, DC 20510

Dear Mr. Chairman:

When I testified before your Subcommittee on October 3, you asked me to respond to two questions on S. 1593, The Work Opportunities and Renewed Competition Act, which was introduced by your colleague, Senator David Durenberger (R-Minnesota) on June 29, 1983.

Your first question asked whether S. 1593 sufficiently addressed the need for research and development in basic industry and, moreover, does it address methods of increased productivity in the railway supply industry?

We would respond by stating that S. 1593 does not specifically address the need for research and development in basic industry, rather it presents a mechanism by which railroad companies, particularly those in net operating loss situations, can avail themselves of new, more efficient products which the railway supply industry has developed. Many RPI member companies have carried on extensive research and development programs over the years, the results of which are just now reaching the market place. S. 1593 would provide additional incentive to purchase those products especially for railroads not in a position to take advantage of tax incentives, such as the investment tax credit and accelerated depreciation credits, long enacted in the tax code. In short, our industry is interested in this legislation in terms of its beneficial effect on our customers.

Your second question asked how S. 1593 will lower hurdle rates of return to encourage investment in the railroad equipment industry as a result of increased use of investment tax credit funds?

We would respond by first noting that our endorsement of S. 1593 does not stem from a search for investors in our industry, but rather a search for purchasers from our industry. To answer your question directly: We have not studied what potential effect S. 1593 will have on investment in the rail supply industry. We do, however, have an analysis of freight car orders, a barometer of our industry, which demonstrates the incentives that the investment tax credit creates.

Representing the Rail Equipment and Supply Industry
700 N. Fairfax Street, Alexandria, Va. 22314
703-836-2332

The attached table shows the freight car orders during the five months prior to the suspension of the investment credit on November 1, 1966. The table also shows the order levels of freight cars during the seven months suspension of the investment tax credit as well as the car order level in the first month the investment credit was restored retroactively in June 1967.

We believe the table portrays the dramatic incentive effect of the investment credit. It can be seen that freight car orders dropped substantially during the suspension period and rebounded dramatically when the credit was reinstated. Similarly, other than a few of the major Class I carriers, there are many railroad companies who are unable to adequately use the investment tax credit on a current year basis. We believe that S. 1593 will not only provide benefits to our customers, the railroads, but also to our industry by encouraging the purchase of new, more efficient and more productive products.

I appreciated the opportunity to testify before your Subcommittee and I look forward to working with you through the Railway Progress Institute on easing the problems in basic industry in America.

Sincerely,

L.L. White, Jr.
Past Chairman of the Railway Progress Institute
Senior Vice President, Commercial & Government Relations
Portec, Inc.

DJD/cad

Attachment

FREIGHT TRAIN CAR MONTHLY ORDERS DURING 5-MONTH PERIOD PRIOR TO SUSPENSION OF CREDIT AND DURING THE PERIOD COMMENCING WITH SUSPENSION AND TERMINATING WITH ITS RETROACTIVE RESTORATION

Orders During 5-Month Period Prior to Suspension		Orders During Period Commencing With Suspension and Terminating With Its Retroactive Restoration	
June, 1966	7,538	November, 1966	6,258
July, 1966	6,353	December, 1966	9,863
August, 1966	8,678	January, 1967	4,364
September, 1966	13,045	February, 1967	4,041
October, 1966	6,720	March, 1967	5,909
		April, 1967	1,728*
		May, 1967	7,677
		June, 1967	11,449**

* Month restoration effective.

** Month restoration retroactively enacted.

Source: Monthly Reports American Railway Car Institute and The Association of American Railroads.

Note: Includes cars of all railroads and private car lines, as well as cars built new by carbuilders and in railroad shops, and cars rebuilt by carbuilders and in railroad shops.

Senator HEINZ. Thank you very much, Mr. White.
Mr. Morris.

STATEMENT OF JULIAN C. MORRIS, PRESIDENT, AUTOMOTIVE PARTS & ACCESSORIES ASSOCIATION, LANHAM, MD.

Mr. MORRIS. Thank you, Mr. Chairman. I have taken the liberty of asking Mr. Lee Kadrich to accompany me this morning. He is our Managing Director of Government Affairs and International Trade.

I am Julian Morris, president of the Automotive Parts and Accessories Association.

The American automotive supplier industry is a pillar of the Nation's economy in its employment, its domestic output, and export performance and in its role in the Nation's defense.

The competitiveness and productivity of the domestic automakers that we supply, and the many basic industries that supply the entire automotive industry needs, turn on the continued ability of our industry to develop and make high quality state of the art products, and I might add export.

The factors that have idled 500,000 workers and much plant capacity include: The steep decline in United States auto production, moves by domestic automakers toward world car production, greater foreign sourcing necessary to contain costs and the shrinking domestic market.

Two industry problems are in a class by themselves. First, Japan's carmakers block the use of American original equipment in cars that dominate the world and hold a hefty share of the U.S. market as well, in turn barring U.S. penetration of the replacement parts markets for these cars. Second, the anticompetitive emission control warranty provisions of the Clean Air Act distort the share of American aftermarkets that a supplier should and would rightfully hold in the absence of regulations that unfairly favor the new carmakers and their dealers.

Our industry is starving for the capital needed if we are to upgrade our facilities and products and break out of an otherwise downward spiral. Increased exports hold the key to meeting our capital needs. And we have many proposals to help our export sales. None is more urgently needed than the enactment of our proposed duty-remission incentives. Economic incentives, we would think, seem to be our best hope for getting our fair share of the Japanese market. Trade distortion at home must stop as well. So we urge the prompt introduction and passage of legislation rolling back the Clean Air Act warranties.

A resilient industry, we are down but far from out. These actions will see us through the transition and lead to the restoration of jobs and plant utilization.

We appreciate this opportunity to present our views, and we would be happy to attempt to answer any questions you have.

[The prepared statement of Julian E. Morris follows:]

STATEMENT OF
JULIAN C. MORRIS
PRESIDENT
OF THE
AUTOMOTIVE PARTS AND ACCESSORIES ASSOCIATION, INC.

Mr. Chairman and Members of the Subcommittee:

I am Julian Morris, President of the Automotive Parts and Accessories Association (APAA). I am pleased to meet with you to discuss the causes and effects of an industry transition that has idled more than 500,000 of our workers and much plant capacity in an industry that has traditionally run at high capacity and full employment. More importantly, I wish to discuss APAA's recommendations that could help move to restore jobs and plant utilization, assuring that the automotive supplier industry will remain a mainstay of the American economy.

APAA is an international organization. We have more than 1,500 members who are manufacturers, manufacturers' representatives, retailers, distributors, wholesalers and others engaged in marketing automotive products here and around the world. These products are sold primarily, but not exclusively, in the "aftermarket." The aftermarket consists of products manufactured for and services provided to automobiles by manufacturers, distributors and retailers that are independent of the vehicle manufacturers.

The aftermarket is vital to this nation's economy, providing at least double the employment of the vehicle manufacturers and their dealers. In matters affecting the automotive industry, however, we often are overlooked due primarily to our size, numbers and geographical distribution -- we are hundreds of thousands of medium and large but mainly small manufacturers, retailers, distributors, and sales agents located in every state of the union producing and selling in excess of $54 billion of parts, accessories and chemicals annually. Appendix A to my statement provides more details about the aftermarket.

Industry firms exported $10.6 billion of automotive products in 1982 and played a key role in the nation's export performance and balance of trade.

And, as has been demonstrated by past mobilization efforts, a strong automotive supplier industry is crucial to national defense needs.

SUPPLIERS OF ORIGINAL EQUIPMENT

American parts and accessories manufacturers form the core of a vast network of some 40,000 domestic firms that support domestic auto making with parts, materials, production equipment and services. According to historical measures cited in the Secretary of Transportation's 1981 report on the U.S. automobile industry, U.S. auto producers in composite spend 55 percent of their revenues on domestic goods and services. This percentage ranges from approximately 50 percent for General Motors to over 80 percent for American Motors.

In 1979 alone, domestic auto makers spent $55 billion in the U.S. The Transportation Department's Transportation Systems Center (TSC) studied these expenditures, using actual General Motors data to extrapolate for the industry. They found that 21,500 suppliers -- 54 percent of the total -- were small businesses employing 25 or fewer workers. Domestic auto makers relied on these firms for 11.4 percent of their needs and did an average of $300,000 in business per firm. Nearly 12,000 companies in the 26 to 99 employee grouping -- representing 29 percent of total suppliers -- accounted for 15.9 percent of total expenditures at an average of $800,000 per company. According to the Secretary's 1981 report:

> A survey performed for TSC found that the top 50 suppliers of parts and materials to the U.S. auto companies accounted for about 27 percent of the latter's supplier purchases worldwide. While the dollar value of the supplier expenditures is greatly skewed in favor of a few large multinational firms, there is still a significant network of smaller suppliers, over 30,000, averaging less than one million dollars per year in auto-related business, that has been instrumental in supporting the auto industry.

The vast majority of industry firms -- some 83 percent -- are small and medium-sized businesses that supply the frames, brakes, electrical parts, drivelines -- in short, the parts and components for every automotive system. Domestic auto makers manufacture their own parts and components in varying degrees: 50 percent for General Motors; 40 percent for Ford;

30 percent for Chrysler; and 20 percent for American Motors. Independent American manufacturers supply more than 90 percent of the balance of the Big Three's parts and components needs and over 85 percent for American Motors.

INDUSTRY IN TRANSITION

The American parts and accessories industry continues to suffer the consequences of more than four years of depression in the domestic automobile industry. With sales of domestic passenger cars still well below 1978 pre-recession levels, and with historically unprecedented deferral of auto repairs and maintenance by the public, our financial position in aggregate is not healthy.

Japan's auto makers have exacerbated our industry's crisis by including little or no U.S. content in vehicle exports that not only dominate world markets but hold a hefty 22.6 percent share of the American marketplace. Japan's lock on its original equipment market, in turn, has foreclosed our firms' penetration of the lucrative replacement parts market in Japan, the U.S., and third countries.

These conditions have resulted in soft sales and the idling of many plants and people in an industry where operating under capacity is most unusual.

From its peak in 1978, the real value of domestic parts and component producer shipments have dropped 38 percent. Profits have fallen so dramatically that the Commerce

Secretary's 1982 report on the industry found the after-tax return on sales of 17 larger firms studied skidding from 4.8 percent in 1978 to 1.5 percent in 1982.

Plummeting supplier industry output has resulted in at least 100 underutilized plants closing between 1978 and 1981. This data -- the most up to date available -- only tells part of the story. The Transportation Secretary's 1981 report concedes that "available information on auto-related layoffs and plant closings in the supplier sector is less complete than for the prime (auto) manufacturers."

As American firms close their plant gates forever, the consequences have been most tragic for our firms' employees. Two studies conducted for the 1981 industry report indicate that "approximately 500,000 U.S. supplier jobs have been lost due to the industry downturn, with over 90 percent of those job losses concentrated in the industrial Midwest states."

These dramatic findings are corroborated by the 1981 Arthur Andersen study of the competitiveness of the U.S. industry and its part suppliers. The chart, which I have attached as Appendix B, depicts a drop of 500,000 supplier jobs from a 1978 peak and projects the permanent loss of 400,000 supplier jobs by 1985 if present economic trends continue.

INDUSTRY RESILIENCY

While our industry is down, it is far from out as a pillar of the national economy. Despite sagging vehicle production, some suppliers, through reductions in fixed operating costs, have managed to improve their bottom lines. The Secretary of Commerce's 1982 industry report cited the previously mentioned sample of 17 producers as "improving their profitability to 2.5 percent of sales in 1982, even though automotive sales were declining." A similar study in the Transportation Secretary's 1980 report showed that 10 larger firms managed to "show some increase in the ratio of 1981 auto-related operating income to auto-related revenues." Cited as a major factor in this achievement was "product lines balanced between original equipment parts and replacement parts tended to have better financial position than those manufacturers only in the original equipment market because the sale of replacement parts tends to be counter-cyclical."

We would caution however, that the industry as a whole suffered enormously as consumers deviated radically from the counter-cyclical norm of past recessions. Nevertheless, the findings attest to the efficiency and underlying strength of the industry.

RELATIONSHIP TO THE NATION'S INFRASTRUCTURE

The importance of our industry continuing as a vital basic industry goes beyond the millions of Americans who work and hold equity interests in parts and accessories firms. Indeed, our sector's fortunes are intertwined with the key elements of the nation's infrastructure.

This fact is underscored by our relationship to the "secondary tier" suppliers, those firms that produce the raw materials and foundry inputs for finished parts and components manufacturing. It is estimated that the automotive industry consumes 21 percent of the steel used in this country; 50 percent of our malleable iron; 34 percent of the zinc; 12 percent of aluminum; 13 percent of copper output; 60 percent of the synthetic rubber; 29 percent of the glass; and 6 percent of the plastic produced.

As principal customers for these products, American parts and accessories manufacturers' needs help to determine the output and jobs of hundreds of thousands of workers in these key sectors.

Of course, the depression in automobile manufacturing and parts production has cut deeply into these basic industries. The principal materials used in vehicle production are iron and steel, aluminum, plastics and rubber, together making up 90 percent of a typical 1982 model passenger car's weight.

According to the Commerce Secretary's 1982 industry report, vehicle composition will continue to change as the average vehicle becomes lighter in weight. The report concludes that "total steel, aluminum, plastic and iron castings usage should decrease only slightly" from depressed 1981 levels. The report adds that within that total, iron and steel volume will "decline by an estimated 11 percent while aluminum and plastic should increase by 47 percent."

Given the changing material needs in original equipment production, the relationship of American aftermarket producers to the secondary tier takes on even greater import. Not only would a vigorous aftermarket sector increase demand for the products of the obvious winners in this transition, but the expanded output of replacement parts and accessories would generate demand for materials experiencing a decline, thereby sustaining these basic industries. And, this process would be furthered, if American manufacturers could gain access to the Japanese original equipment and replacement parts markets.

The more raw materials that our sector purchases, the greater will be the economies of production achieved in these industries, resulting in better unit prices for all purchasers of these commodities, especially domestic auto makers.

SYMBIOTIC RELATIONSHIP OF SUPPLIERS AND AUTO MAKERS

A symbiotic relationship exists between American car makers and automotive suppliers, illustrated earlier by the high percentage of independently sourced parts and components used by all four domestic auto makers.

The Commerce Secretary's 1982 report forecasts that capital starved U.S. auto makers will source an increasing share of their original equipment parts from independent manufacturers. The report concludes:

> Suppliers are playing an important role in the domestic automobile companies' quality improvement efforts. The emphasis on product quality extends to externally-sourced parts and components as well as internal production. This requires improved quality control by suppliers and closer coordination between suppliers and vehicle manufacturers in the product design phase.

Indeed, American suppliers are the key players in vehicle manufacturers' cost reduction programs, most notably the streamlining of operations. Plagued by years of high capital costs incurred for large in-process inventories, domestic auto makers are taking a page out of the Japanese producer's book and developing their own versions of the kan ban, or just in time delivery systems. By keeping inventories as low as possible, through daily or even hourly delivery, the cost advantages are innumerable: less cash tied up in inventory, savings in storage, material handling, insurance, security and so on.

General Motors, Ford and Chrysler have all moved to the new system in varying degrees. The prime example is the Buick City concept, involving suppliers, 80 percent of which are within 75 miles of the Flint plant. Other examples include just in time delivery of instrument panels to a Ford plant and Chrysler's use of the system for delivery from an engine plant.

Research by the Transportation Systems Center (TSC) reveals that use of the innovative system is to be coupled with a reduction in the number of parts suppliers, as part of an overall effort to improve quality and reduce costs through greater production economies. General Motors, for example, recently announced plans to slash its 3,500 customary parts and components suppliers by half within the next three to five years. The report concludes that fewer suppliers will be working more closely with the auto makers as "an integral part of their cost and quality improvement efforts. In some cases, suppliers will have to physically relocate plants to support just in time production techniques."

The American parts and components manufacturing sector of the future, as envisioned in the Commerce Secretary's 1982 report, will be "composed of smaller numbers of larger firms" as vertical integration within the sector increases. Domestic vehicle manufacturers, on the other hand, are expected to become "less vertically integrated in response to limited availability of capital and cost reduction pressures."

This reaffirms the conclusion of the Secretary of Transportation's 1980 report to the President on the automobile industry that: "In their move to economize, the leading automakers will be leaning heavily on suppliers for research and engineering development necessary to produce the better quality and less costly components of the future." The reports add that "suppliers unable to upgrade their facilities, take risks, or sponsor research will lose out to suppliers with competitive advantages of efficiency, size or technical know-how."

Clearly, the costs for meeting the demands of this transition will be high. For example, suppliers who are required to fit their production and delivery rate to the auto makers' assembly schedules will incur substantial costs in altering their production, changing their transportation system, and perhaps even relocating their facilities.

The challenge cited by the Secretary's 1980 report applies equally to aftermarket producers. A recent study of American aftermarket suppliers conducted by Frost and Sullivan notes that parts and accessories manufacturers are under heavy pressure to acquire the technology needed to compete with a new generation of "sophisticated" products "which are more efficient and longer lasting."

INDUSTRY CAPITAL CRISIS

The price tag for industry firms' survival in this era of rapid transition is very high indeed. It is tragic, therefore, that the sharp drop in sales and high interest rates have left our companies starving for capital. The long period of capital market instability has hurt all firms, but especially those thousands of small businesses who are forced to finance their long term needs with volatile short term debt instruments.

Industry firms want to, and indeed must, invest substantial capital in efficient, less costly production facilities if we are to meet the demands of our auto makers and if we are to grapple with increasingly effective foreign competition. Industry firms desperately need capital to engineer, design, and tool for new products; to adapt existing products for the latest model vehicles and cope with the proliferation of parts that comes with burgeoning proliferation in models from around the world. All of this must be accomplished at competitive prices and with the assurance of a return on investment.

JAPAN THREATENS INDUSTRY SURVIVAL

We believe, Mr. Chairman, that the very survival of our industry hinges on American success in cracking the Japanese original equipment and replacement markets.

A thorough discussion of Japanese trading practices and the injury they have inflicted on our industry is fundamental to the exploration and formulation of remedies. Left unchecked, these practices will prevent the capital formation our firms need to avoid a tragic downward spiral of noncompetitiveness.

In 1960, the U.S. produced over 52 percent of the cars made worldwide; Japan produced only 1.3 percent. In 1970 the U.S. share had fallen to 29 percent; Japan was up to 14 percent. By 1980 Japan had passed us as the frontrunner of car producing nations with over 24 percent of the world market; we were down to under 22 percent.

The unnatural growth in productivity and price competitiveness of the Japanese auto parts industry is not simply a function of optimal management practices and production techniques. The Japanese vehicle manufacturers have a long established family relationship with most of their parts suppliers consisting of interlocking directorships and equity position, under the aegis of the Central Bank's traditional practice of selective access to credit. This has resulted in a highly nationalistic, in-bred, protected and virtually impenetrable vehicle manufacturer-supplier environment in that country.

Harbridge House Vice President John B. Schnapp has researched the "really close, symbiotic relationships between the vehicle makers and their principal suppliers."

According to Schnapp, "these relationships are manifested in investments, in loans, and in technological interchange." He adds that very often the auto makers "own more than token equity positions in their leading suppliers" and frequently act as a "source of loan capital to their suppliers and as a technological resource."

With "families of vendors surrounding each of the principal auto makers," Toyota and Nissan, Mr. Schnapp concluded that "there are relatively few truly independent parts makers."

With the title of the World's Number one auto producer under their belt, the Japanese have now set their sights on usurping our position as the world's leading parts producer. It plans to reach that goal in the 1980's according to a 1980 report by its Long Term Credit Bank.

Decades of protectionism, such as amazingly low tax rates, enormous asset depreciation and deferred taxes for costs of developing new export markets, kept competitors at sea. The Japanese government in a 1979 publication entitled Your Market in Japan: Automotive Parts and Accessories describes in part its nationalistic production incentives and industrial targeting:

> Developing and upgrading the means of transport is indispensable for the development of a country. Therefore; from the late 1950's on when the future of Japanese industry began at long last to look brighter, both the Japanese government and industry·

> made an all-out effort to develop and nurture the motor vehicle industry.
>
> The auto-parts industry in particular had to be cultivated and strengthened as it is the foundation of the auto industry as a whole. At the outset, the Japanese auto-parts industry was a sector with a large number of small-size and financially weak firms. But with the help of various government measures, such as the Law for Temporary Measures for Promoting the Machinery Industry enacted to foster and strengthen fundamental industrial sectors in the machinery industry in Japan, the Japanese auto-parts industry achieved rapid growth.

These policies have paid off for the Japanese.

The toll for being locked out of the aftermarket for Japanese vehicles in Japan, here and in third countries has risen considerably in recent years as the worldwide car population fills increasingly with Japanese vehicles. In 1960, Japan exported 4.2 percent (7,000 units) of their domestic vehicle production. Today the Japanese export over 36 percent or nearly four million vehicles. By contrast we export less than nine percent of our domestic production. More than 46 percent of the Japanese cars exported in 1980 ended up within the borders of the U.S. Only one percent of our U.S. car exports was able to penetrate Japan's home market.

U.S. NEGOTIATORS ATTEMPT TO OPEN ORIGINAL EQUIPMENT MARKETS

With the very survival of the aftermarket industry hinging on success in entering the Japanese original equipment and replacement markets worldwide, we applauded government efforts that led Japan to issue its 1980 Orderly Marketing Agreement for parts trade. A key element was a Japanese parts purchasing mission to the U.S. in September, 1980 and the subsequent Japanese commitment to purchase $300 million in American original equipment in 1981, with significant increases promised thereafter.

Although the huge $1 billion parts trade deficit with Japan in 1980 made the $300 million look somewhat anemic, nonetheless APAA welcomed the promise as a potentially important first step to better market access. Regrettably, the Japanese fell far short of even this modest goal.

Commerce Department figures for 1981 showed only $119 million in U.S. parts sales to Japan, a nominal increase over 1980's figure of $109.8 million, but a major step backward when adjusted for inflation. Japan, on the other hand, enjoyed auto related sales in the U.S. exceeding $1.8 billion in 1981, leaving the U.S. in a deficit position of more than $1.6 billion. Even more distressing is the fact that the much publicized tariff reductions on automotive products nearly exclusively covered labor intensive items that did not appear on the list targeted for purchase. Rather, the list that continues to interest Japanese auto makers includes energy intensive items such as glass or aluminum and from year to year their purchases of these products hover near the $100 million mark.

Most regrettably, Japan used its Voluntary Restraint Agreement on autos to excuse itself from its parts purchasing commitment and reneged on its commitment to meet with U.S. negotiators during 1981 and 1982 to monitor the mission's progress. Quite expectedly, the Commerce Department's 1982 survey of U.S. firms that sought Japanese business showed the mission to be an exercise in futility. Exports to Japan in 1982 were a paltry $128 million. I have attached as Appendix C the complete set of the department's survey findings.

We contend and the Commerce Department backs us up that this staggering imbalance is not caused by the lack of quality or price competitiveness on the part of U.S. made products. Nor can the root of the problem be attributed to a strong U.S. dollar, high interest rates or U.S. apathy in developing the Japanese market.

The fundamental cause is Japan's longstanding policies and practices which encourage exports and discriminate against imports.

In spite of the recent demise of the Japanese import duty, the delivered prices of foreign vehicles in Japan remains significantly high. This is due to the import bias which tinges the Japanese commodity taxes; a tax which exempts exports but is imposed on imports. Then there are the certification requirements, local distribution methods, and road taxes which discriminate against the larger engines of U.S. models.

These obstacles combined with a panoply of other non-tariff barriers against U.S. original parts -- including the withholding of parts specifications developed behind doors closed to us; an unwieldy parts approval system; and that uniquely strong alliance between vehicle and parts makers -- generally have conspired to prevent outside competitors from penetrating the walls of their safe and secure world. I have attached as Appendix D my 1980 testimony before the Senate Select Committee on Small Business detailing specific cases of non-tariff barriers.

The sixth wave of Japanese trade liberalization promises made in little more than a year hit last April. Industry analysts found nothing of value for the U.S. automotive and related industries in the earlier packages and express misgivings about the latest Japanese maneuver. In fact, General Motors President F. James McDonald has concluded that instead of facilitating auto trade, the inspection and certification changes "actually favor Japanese models more now than before." Due to the structure of the new rules, McDonald argues that low-volume sellers such as the U.S. auto makers "would incur huge cost penalties if we were to use these more liberalized procedures." Despite the fact that the U.S. exported only 3,562 passenger cars to Japan in 1982, down from 7,742 in 1981, Japan is reluctant to reciprocate on the self-certification to safety and noise requirements afforded its exports to the U.S.

It would appear that negotiations and agreements have not substantially changed the sad state of U.S.-Japan trade relations. Our manufacturers still face a general inability to penetrate the Japanese original equipment market.

EFFORTS TO OPEN AFTERMARKET FAIL

As the world fills with Japanese-made vehicles bearing little or no American equipment, American aftermarket suppliers are faced with constricting global replacement markets. Leading to further replacement market erosion is the unusually strong hold Japan's car makers have on their dealers in the U.S. and world markets, whereby they are coerced to stock only Japanese-made service parts.

Aftermarket barriers in the U.S. alone cost American suppliers billions of dollars in lost sales opportunities for items such as batteries, lights, fan belts, starters, tires, and so on. Cracking this market means so much to the vitality of our industry that American negotiators insisted that steps to open the dealership network be a component of Japan's Orderly Marketing Agreement. As with the other elements, it proved meaningless. When the Department of Commerce allowed to lapse the task of monitoring the original equipment purchases, the aftermarket issue became a casualty of neglect.

Letting Japan off the hook on its promise to open the dealership network was further exacerbated by a highly inaccurate Japanese commissioned study that said the independents' share of the import market in the U.S. was growing so fast that nothing more need be done. APAA fought for industry's right to review the study which was locked inside the Commerce Department for several months. Once APAA secured the study, we refuted it with our own critique which we have shared with the Administration and Congress. Our comprehensive analysis of the study is attached as Appendix E.

As former Assistant Secretary of State Robert Hormats testified in 1981 "this market (U.S. aftermarket) is one in which U.S. firms should be able to compete actively and successfully. But it has been very hard for American firms to penetrate this market, and Japanese firms appear reluctant to fully cooperate with them, while Japanese parts sell vigorously." Hormats added that Japanese claims of poor U.S. price and delivery simply do not apply when dealing with American suppliers on their home turf. Yet, a Department of Commerce suggestion to have U.S. made parts certified so that dealers of Japanese vehicles could purchase them has met with stiff Japanese resistance.

JAPANESE PRACTICE CLOSED DEALERSHIP NETWORK

Clearly, Japan's auto makers intend to foist on the U.S. and other markets the same closed distribution web it has woven for its home market. Indeed, in Japan there is almost no independent aftermarket as we know it. Harbridge House executive, John Schnapp, has cited the 1981 edition of Guide to Japan's Auto Parts Industry that concludes "the independent distribution channel is weak in comparison with vehicle dealer organizations." According to Schnapp, the author, Mr. Kenji Okochi, whose export company represents parts makers, describes the "reasons for this peculiar phenomenon." Chief among reasons offered is "that each vehicle maker signs an exclusive contract with the parts maker which may allow him to control the production of parts applications for his vehicle." By way of contrast, the U.S. aftermarket for domestic vehicles is so open that a 1980 study by A.T. Kearney revealed that only 18 percent of parts sales for GM passenger car applications were realized through franchised GM dealers.

Ironically, the closed distribution network has victimized Japanese parts makers who see a good thing in our open marketplace but do not know how to get at it. Mr. Schnapp describes their quandary:

> On the one hand, they recognize that the structure of our market is vastly different from the replacement parts market in Japan, and they see the need to adapt their own strategies to the differences existing in the American market. On the other hand, there are very strong pressures on them to avoid straining the relationships that they have created with their only customers who would like, of course, to channel most of the American sale of replacement parts through their own franchised dealers, much as they currently have succeeded in doing.

Still, Japan's parts makers have a leg up on industry firms -- tooling economics. Without the volumes assured by original equipment orders and faced with a proliferation of Japanese new car model series -- 113 versus 110 domestic model series -- it is virtually impossible for our firms to achieve the economies of scale necessary to produce economically for a particular application. The net effect is the exportation of our plant capacity and jobs to Japan for products that we are qualified to manufacture.

APAA is encouraged by the growing Congressional awareness of the problems we have discussed. We believe that the Energy and Commerce Committee report on last year's act, H.R. 5133, truly went to the heart of the problem:

> The Committee regards the failure of foreign automakers to purchase more American-made auto parts very seriously. As a result Section 7 of the bill directs the Secretary of the Department of Transportation and the FTC to conduct a study to determine how to increase the use of American made new and replacement parts by foreign manufacturers. The Committee intends for representatives of U.S. auto workers, parts manufacturers and vehicle manufacturers to be consulted in the development of this study.

We are especially gratified that the committee sensed not only the dangers of the closed U.S. aftermarket but seized as well on the critical question of how we might increase our sales of original equipment to foreign manufacturers. Unless these markets are opened, much of our industry's plant capacity and as many as 400,000 of the supply sector's half million unemployed will remain permanently idled.

MEETING THE JAPANESE CHALLENGE

At first blush, one might think the current domestic auto making recovery will solve everything -- no need to worry about Japan if there is plenty of demand for American original equipment and replacement parts. While we are very pleased by the stepped up pace of domestic production -- 9.2 million units anticipated this year versus only 8.0 million units in 1982 -- the industry transition and forecasts for its future spell a very incomplete solution to the problems of parts and accessories manufacturers.

The good news for the auto makers is that in cutting costs, improving production and marketing a better quality vehicle they will come close to their $4.8 billion earnings record achieved in 1978, and they will do so producing 28 percent fewer vehicles than the 12.6 million units manufactured in 1978.

Industry analysts tell us that we will not again see the days when American parts and components were demanded for the production of 12.6 million vehicles. In fact, the Delphi forecast released this year by Arthur Andersen, the University of Michigan and the Michigan Manufacturers Association projects 1985 domestic production at 10 million units and 10.5 million cars produced domestically in 1990.

The strength and duration of the domestic companies' recovery, according to Chase and other analysts, depends on their success on the battleground of small car competition. However, estimates of losses of as much as $1,000 on every subcompact sold by the Big Three and small car assembly plants operating well below capacity -- despite below cost pricing -- may lead to an untenable solution: U.S. auto makers may hire Japan to build their small cars.

The Commerce Secretary's 1982 industry report comments on this possibility:

> ...the auto firms will continue to face the realty of the Japanese manufacturing cost advantage. Responding to this cost

> advantage during a period of limited financial reserves has been particularly difficult. GM's plans for small cars illustrates one possible path the companies may take. GM has agreed to import 200,000 small cars annually from Isuzu starting in 1984 to market in this country. In addition, GM may bring in up to 100,000 mini-cars annually from Suzuki. When these two agreements are combined with GM's joint venture with Toyota to assemble 200,000 small front-wheel drive cars annually, the company will be able to market 500,000 modern Japanese-type cars annually with minimal capital investment.

Should General Motors carry through with these initiatives, competitive market forces will undoubtedly dictate similar small car sourcing strategies by Ford and Chrysler. We are however encouraged by the attention that long-suffering U.S. auto makers have drawn to the basis for Japan's advantage, shown by studies to be $1,500 to $2,000 per car.

Ford Chairman Philip Caldwell has charged that Japanese tax policy and the undervalued yen account for as much as $1,300 of the so-called advantage. Japan's commodity tax raises the price of cars sold in Japan, including imports, by 17 to 22 percent. The rub is that cars built for export have the tax rebated, in effect doubling the advantage -- a tax disparity worth $500 to $600 per car.

Add to this the undervalued yen, and Japanese manufacturers gain an added automatic advantage over American car makers of $600 to $700 per car. For too long a weak yen has made U.S. automotive products exported to Japan far too expensive and drastically reduced the cost of Japanese imports. And of course we are placed at a severe competitive disadvantage when competing with the Japanese in third markets.

Economists agree that to remove the disparity we need to see the yen move down to 200 to the dollar or less. At present it is trading at about 240 to the dollar, giving Japanese manufacturers a whopping 20 to 25 percent price advantage.

While private economists in general have discovered no evidence to indicate that Japan has consciously manipulated the yen's value over the past several years, they generally agree that certain Japanese policies and structural factors indirectly have contributed to its recent undervaluation. Penelope Hartland-Thunberg, Senior Fellow in Economic Research at Georgetown University's Center for Strategic and International Studies attributes the low yen to the government's policy of insulating the domestic money market from the rest of the world and allocating bank credit through direct controls.

Whatever the Japanese government is doing to suppress the yen, it must be brought out into the open and stopped. We urge that Congress direct the Administration to investigate this problem fully and to negotiate a resolution of this unacceptable disparity with the Japanese.

Finally, on the matter of cost advantage, Harbour and Associates determined in a 1982 study that just in time production accounted for $550 of the $2,200 cost advantage held by Japan in subcompact car production. A stronger U.S. supplier industry could provide similar savings to domestic car makers and help avert the exportation of U.S. small car production.

PROPOSED RELIEF FOR THE SUPPLIER INDUSTRY

Whether or not the U.S. forfeits small car production, the limited domestic auto recovery and the Japanese challenge jeopardize our industry's future health. The United Auto Workers and their AF of L-CIO allies are lobbying intensely for passage of domestic content legislation which they purport will help us.

We do not want the cure, it would only worsen the malady. APAA believes that in the process of attaining the bill's purported objectives of curbing foreign sourcing by U.S. auto makers and encouraging foreign auto making investment in the U.S., the recovery prospects for U.S. auto makers and suppliers would be shattered.

We are concerned that the bill's more stringent content test for U.S. auto makers -- imposed from the outset -- would damage their competitive posture in both domestic and foreign markets. The proponents disregard the emerging world car developments of the last decade that wrought a previously unforeseen and still largely ignored network of partnerships among car companies around the globe. These joint ventures and alliances (e.g., GM-Isuzu-Susuki, Chrysler-Peugot-Mitsubishi), were born of enormously high capital costs for the need to secure for participants both new vehicle types and components, and new markets.

Every industry analysis we have seen supports the Secretary of Transportation, who in his 1980 report on the U.S. automobile industry projected that U.S. auto makers will "increase overseas parts sourcing from the present less than five percent to 10 percent by 1985 and 15 percent by 1990." The Delphi forecast of Arthur Andersen et al. sees the percentage of foreign-sourced parts going to 25 percent as early as 1987. Attempts to modify the decision-making behavior of U.S. firms by legislative fiat would jeopardize their strategy of reaching greater economies of scale necessary to contain production costs.

U.S. manufacturers must have complete flexibility in deciding how they will build competitively priced cars needed to command their rightful share of U.S. and foreign markets. The alternative is to be trapped in an ever-downward spiral of lower production and sharply curtailed demand for American made original equipment and replacement parts.

Foreign firms benefiting from relaxed content requirements over the three year phase-in could capture even more ground in the battle for American market share. While hamstringing the component purchasing practices of American manufacturers, foreign firms could source freely, and they most assuredly would widen their production cost advantage. When we consider as well the floodgates that will open when the Voluntary Restraint Agreement ends, we believe those three years will prove especially damaging to American auto making and parts manufacturing.

Parenthetically, APAA disagrees with the assessment made before the House Energy and Commerce Committee by United Auto Workers officials that the bill would not affect American aftermarket manufacturing. APAA's objections to domestic content are made from our perspective as a representative of both original equipment and aftermarket suppliers.

It is ironic enough that the UAW misjudged the ramifications for hundreds of thousands of union and non-union workers in the supplier sector, but even more so that they fail to see the danger to the core of their constituency, auto making workers. Workers in both sectors would lose as U.S. car makers were forced into a less competitive posture. And, Japanese investment in U.S. auto making facilities certainly promises to be no panacea for organized labor. In fact, those Japanese companies now producing in the U.S.

have shown an aversion to collective bargaining. The same holds true for the United Kingdom, where Japanese owned assembly facilities remained unorganized after eight years of operation, despite the powerful union movement there

Attainment of the legislation's second objective, the encouragement of foreign investment in U.S. auto making facilities, would also prove inimical to our interests. While American firms have selected a decentralized world car strategy, sourcing certain components from around the world, Japan has charted a centralized course that calls for building its world car at home. The Secretary of Transportation's 1980 report on the industry described Japan's strategy as:

> ...taking advantage of their domestic labor force, achieving low cost production through closely coordinated, tightly integrated and centralized production facilities, and then shipping the product around the world. Although assembled in other countries, even Japanese knock-down kits are dominated by Japanese made parts.

Once fully phased in, a number of analysts agree that many foreign firms could meet the content requirements without increasing their purchases of American parts and accessories. MIT auto analyst Martin Anderson has calculated that a number of foreign firms with relatively low sales in the U.S. "could collectively expand their imports by one million units with no added American content." Thus, a number of Japanese car makers, now stymied by the export restraint, could gain in our market while adhering to their world car strategy.

Making the situation even more grim for our industry are the potential responses that a domestic content law might evoke from the behemoths of Japanese auto making, Toyota and Nissan. Should these and other larger firms choose to extend their presence into the U.S., we foresee little appreciable increase in their purchases of American made parts and accessories. This presence would not begin and end at the assembly line. Rather, foreign owned assembly lines would be fed by Japanese parts plants and the well established network of native suppliers. Under more balanced conditions, we would have little to fear from increased foreign competition within our borders. However, our current precarious industrial position puts us at a competitive disadvantage and renders a vital U.S. industry vulnerable to foreign domination.

In its report, "The Automobile Industry in the 1980's," issued in May, 1981, the Long Term Credit Bank of Japan boasted that during the 1980's Japan will become the world's leading supplier of auto components. The report claims that "the export ratios of most of the independent auto component companies will rise, and some of them are setting up production abroad. Even component companies which are subsidiaries of auto companies, especially those producing standardized components are developing their exports. Some of these companies have announced plans to go abroad with their parent companies."

Former Assistant Secretary of State for Economic Affairs, Robert Hormats, testified in 1981 that the Honda auto factory in Ohio and the Nissan truck plant in Tennessee were "expected to procure initially about 40 percent of their inputs, by value, from U.S. suppliers, with the possibility of future increases in such procurement." We have cause to fear that even these modest levels of U.S. content will not be attained. Already Honda has announced plans for certain Japanese suppliers to open plants near the Ohio factory. By way of explanation, Honda complains that it can not find adequate price competitive U.S. supply sources and is forced to revert to home suppliers.

In the case of one U.S. firm which sought Honda business, Commerce officials revealed that the 40 percent price differential between the Japanese and U.S. competitors was simply a function of the quantities requested from the U.S. firm. The lot size discussed with the American company was so much smaller than orders placed with Japanese sources that legitimate price comparisons are impossible.

And in early 1982, it was announced that the Japanese tire company, Bridgestone, had acquired a large Firestone truck tire plant in Nashville. The $52 million purchase sets the stage for the Japanese tire company to become the original equipment supplier of tires for 120,000 light trucks that Nissan Motors plans to build annually at its plant in that state. The Firestone plant, under-capacity because of a depressed market for U.S.-built light trucks, was an easy mark.

Should large firms decide that it is not cost-effective to undertake production in the U.S., the legislation would be tantamount to an import quota, leaving our exports vulnerable to retaliatory steps taken under the General Agreement on Tariffs and Trade (GATT). The recent GATT panel ruling that the domestic sourcing requirement of Canada's Foreign Investment Review Agency (FIRA), challenged by the USTR, were inconsistent with the agreement points to the likelihood of a successful challenge being raised against a U.S. domestic content law.

Rather than violating the law, we urge our negotiators to continue the active policing of other nations whose content laws rob Americans of jobs. Mexico, for example, boasts that its content requirements will boost Mexican parts exports from $640 million in 1979 to over $5 billion by 1985. Some 60 percent of these exports will head for the U.S. market, translating into the equivalent of 86,000 to 115,000 jobs in the United States auto and auto parts industry, according to a 1981 report by the U.S. Labor-

Industry Coalition for International Trade. Interestingly, the Coalition, comprised of nine labor unions and seven corporations, strongly condemned performance requirements in all forms and urged the U.S. government with all due speed to resolve such inequities through GATT or other dispute settlement mechanisms available.

RECIPROCITY IN TRADE

We wish to commend you, Mr. Chairman, and your colleagues for your work in developing and passing legislation designed to win fair and equitable market opportunities worldwide for U.S. exporters. We are pleased that the International Trade and Investment Act is now winding its way toward passage in the House.

We welcome the reciprocity approach as a valuable alternative to any short-sighted protectionist remedies. An arsenal of retaliatory weapons and the willingness to employ them should bolster our negotiators' efforts to gain reciprocal market access.

The legislation provides an important mandate for the maintenance of an annual inventory and analysis of laws, policies or practices which constitute significant barriers to trade. Furthermore, it strengthens our bargaining hand by allowing the President to take offsetting trade actions against countries impeding our exports by methods inconsistent with bilateral or multilateral trade agreements.

These changes, if utilized forcefully, will put other nations on notice that we intend to identify their barriers and that we have the backbone to retaliate unless they remedy the situation. The vigorous pursuit of U.S. exporting interests along these lines can only help the export performance of American parts and accessories manufacturers.

We are especially concerned that those nations with incipient auto making industries, such as Korea, Egypt, Malaysia, and Indonesia not deny market access to American automotive suppliers. Where these nations are concerned, the time to act is now, so that we prevent them from following the Japanese model of automotive industry development. That model is perhaps best described by Secretary Baldrige as the practice of (1) protecting their industry from infancy through a strong growth period, (2) making it strong with subsidies, and (3) then turning it loose on the world and calling it free trade.

Regrettably, it is too late for compiling an inventory of Japanese practices discriminating against our industry firms. All of the laws favoring their parts industry have been repealed. Japan today ostensibly has neither tariff or non-tariff barriers to American parts and accessories exports. Indeed, our problems relate mainly to the institutional barriers of the interlocking Japanese automotive and supplier industries. What we need is some kind of economic incentive to gain reciprocal trading access.

APAA BACKS PARTS PURCHASE INCENTIVE PLAN ALTERNATIVE

The emerging globalization of the auto industry, the need for car companies to obtain some parts outside the U.S. in order to reduce costs, and the shrinking of the domestic market converge into a critical challenge for automotive suppliers: we must export more.

This challenge, Mr. Chairman, demands action in the form of incentives for foreign vehicle manufacturers to purchase U.S. made parts, rather than misguided remedies that could well discourage this.

Our Association, in concert with five other automotive trade associations that form the Automotive Products Export Council (APEC), has developed the Parts Purchase Incentive Plan to save American jobs and equip foreign vehicle imports with American made automotive products. Copies of a legislative draft of the Plan and analysis are attached to my statement as Appendices F and G.

We agree, Mr. Chairman, with your enunciation of the principles of reciprocity legislation, and believe our Plan would dovetail with the legislation. The Plan's free trade incentives, available to vehicle manufacturers of all nations wishing to participate, would open vast foreign market opportunities for U.S. manufacturers while retaining our open markets. Had our Plan been in effect in 1982, foreign vehicle manufacturers could have saved $781 million on their exports to the U.S. They could have done so by purchasing an equivalent amount of U.S.-made parts and accessories.

Our Plan is a new way to promote automotive product exports -- using an import vehicle duty credit to induce foreign-based auto makers to buy American products. The Plan would build on duty remission incentives in Item 807.00 of the Tariff Schedule that allow a vehicle manufacturer to deduct the value of U.S. content in a car from the car's land value before the 2.8 percent duty is applied.

For example, a vehicle manufacturer in a foreign country may purchase U.S. automotive components for assembly into finished vehicles. If those automobiles or light trucks are sold in the U.S., the value of U.S. content added may be deducted from the total value. This would give the value for duty. Since the amount to be charged for duty is lower, the duty paid will be lower.

The exhibit shows motor vehicle imports under Item 807.00 from Japan.

1981 MOTOR VEHICLE IMPORTS (ITEM 807.00)

(in thousands of dollars)

COUNTRY	TOTAL VALUE ($)	DUTY FREE VALUE	DUTIABLE VALUE
Japan	$3,800,000	$22,000	$3,780,000

In 1981 vehicle manufacturers in Japan that imported components from the U.S. and made use of Item 807.00 duty remission saved $616,000 in duty. The savings came from assessing the duty on a smaller amount, having first deducted the value of the U.S. content.

Example (A) shows how the current law works. An average $5,300 Japanese car import with no U.S. content lands in the U.S. The 2.8 percent ad valorem duty rate would apply to the $5,300 total value. The $149 duty would make the landed cost of the vehicle $5,449. If the vehicle manufacturer has used $300 worth of U.S. components, the $300 could be deducted from the $5,300 total value. This would give a dutiable value of $5,000. When the 2.8 percent rate applies to the $5,000, the duty owed is $140. The manufacturer has cut $9.00 from the duty...hardly a strong incentive to purchase U.S. goods.

Example (A)

Current Law - Cars

U.S. Parts Purchased $ ($5300/car)	Ad Valorem Value $	Duty %	Duty $	Landed Cost	Value of Deduction $
-0-	5,300	2.8	149.00	5,449.00	-0-
300	5,000	2.8	140.00	5,440.00	9.00
1,000	4,300	2.8	120.40	5,420.40	28.60

By purchasing $1,000 in U.S. automotive products, the landed cost would be $5,420.40. By using U.S. content for 20 percent of the vehicle, the manufacturer would save $28.60 in duty.

Example (AA) shows the same type of comparison for light trucks. With no U.S. content, the 25 percent duty rate applied to the average light truck's value of $4,200 adds $1,050 to the vehicle landed cost. Purchases of $600 would reduce the dutiable value from $4,200 to $3,600. Applying the 25 percent duty rate, the duty would be $900. This makes the vehicle landed cost $5,100. The manufacturer has saved $150 in duty by purchasing $600 of U.S. automotive products.

Example (AA)

Current Law - Light Trucks

U.S. Parts Purchased $ ($4200/ light truck)	Ad Valorem Value $	Duty %	Duty $	Landed Cost	Value of Deduction $
-0-	4,200	25.0	1,050.00	5,250.00	-0-
300	3,900	25.0	975.00	5,175.00	75.00
600	3,600	25.0	900.00	5,100.00	150.00

When the duties are high, as in the case of light trucks, vehicle manufacturers get much more bang for the buck out of the Item 807.00 remission. However, the low auto duty rate, scheduled to go lower, offers far less incentive to purchase U.S. automotive products. This is not the only important limitation of the current law.

It also requires the parts to return on vehicles to the U.S., causing American parts and accessories manufacturers to lose what otherwise could be valuable replacement parts sales for U.S. products destined for foreign markets.

Despite the limited incentive for purchasing car components under Item 807.00, the exhibit we looked at earlier shows a high level of interest by vehicle manufacturers in Japan. That level of interest given a limited program offers some exciting prospects for use of our Plan. Under the Plan, the credit incentive would be much more generous. One important improvement to the law would spell the difference. Foreign-based automakers could receive a credit against the vehicle duty owed -- a dollar of credit for each dollar of U.S. product purchased. This credit approach would cut the tax, or duty, itself, rather than cutting the amount to be taxed as does the current deduction approach -- a greatly enhanced incentive to buy American.

Example (B) shows a manufacturer using $100 in U.S. automotive products. The $5,300 value of the car would have the full duty of 2.8 percent assessed. The $149 in duty would then be reduced by the $100 of products purchased. This leaves only $49 in duty. The following lines show that the amount of dutiable value does not change as it does under current law. Rather, when $300 in purchases have been made the $149 duty is eliminated. The car lands duty free. Of course, the maximum credit allowed is the amount of duty that would normally be due. For a $5,300 car, regardless of the amount of product purchased over $149, the credit could never exceed $149.

Example (B)

Parts Purchase Incentive Plan - Cars

U.S. Parts Purchased $ ($5300/car)	Ad Valorem Value $	Duty %	Duty $	Landed Cost	Value of Credit $
100	5,300	2.8	149	5,349	100
300	5,300	2.8	149	5,300	149
600	5,300	2.8	149	5,300	149

Example (BB) shows an average light truck import with a total value of $4,200. The 25 percent duty is applied in each instance, and the duty owed is always $1,050. The credit against duty owed are shown for the various purchase levels of $100, $300 and $600. The maximum credit permitted is $1,050.

Example (BB)

Parts Purchase Incentive Plan - Light Trucks

U.S. Parts Purchased $ ($4200/ light truck)	Ad Valorem Value $	Duty %	Duty $	Landed Cost	Value of Credit $
100	4,200	25.0	1,050	5,150	100
300	4,200	25.0	1,050	4,950	300
600	4,200	25.0	1,050	4,650	600

COMPARISON OF DUTY OWED

	Present Law	Parts Purchase Incentive Plan
Landed value of car	$5,300.00	$5,300.00
2.8 percent duty when car has no U.S. parts	149.00	149.00
Duty charged if $100 in U.S. parts were purchased	146.20	49.00
Duty saved by manufacturer	2.80	100.00

Under the plan, a vehicle manufacturer in a foreign country would purchase U.S. parts and accessories, and have them shipped to one of its foreign plants. The Secretary of Commerce would devise the means to monitor the purchase orders and exports. The manufacturer then exports cars and/or light trucks to the U.S. When they land, the duty rates are applied, 2.8 percent for cars and 25 percent for light trucks.

In another major improvement to current law, the plan would base the auto maker's duty credits on the total amount of products purchased, with no stricture that the parts reenter the U.S. Ideally, the car makers would install the products or stock them as replacements for use anywhere in the world -- opening the highly lucrative global aftermarket. In fact, even if none of the parts and accessories reenter the U.S., the credit would not be jeopardized.

1982 MAXIMUM PARTS PURCHASE INCENTIVE PLAN CREDITS

Import Type	Units	Average Maximum Credit ($)	Total Maximum Credit ($)
Japanese Cars	1,801,185	149	268,376,565
Japanese Light Trucks	354,587	1,050	372,316,350
All Other Cars	422,727	317	134,004,459
All Other Light Trucks	1,515	3,825	5,794,875
TOTAL MAXIMUM CREDIT (ALL SOURCES)			780,492,249

Of all the advantages that recommend this Plan, none is greater than the volume of sales and jobs it would generate for our suppliers. Manufacturers of cars and light trucks in foreign countries could land their vehicles in the U.S. duty free, by using an average of $149 in automotive products per $5,300 car and $1,050 in products per $4,200 light truck. They would save $781 million in duty, and that translates into $781 million in U.S. automotive product exports.

Additional sales of $781 million would more than pay for the Plan through revenue feedback from higher corporate and personal tax receipts and transfer payment savings.

Commerce Department calculations cite a cost to the Treasury of $1 billion in lost revenues and transfer payments for every 30,000 unemployed workers. Secretary Baldrige has also cited statistics that every $1 billion in manufactured exports yield 33,000 manufacturing jobs. Hence, our Plan could have generated 26,000 jobs in original equipment supply alone. The benefit to the Treasury from those 26,000 workers would total $867 million -- more than enough to offset the cost of the program.

Let's also look at the income 26,000 jobs can add to the economy. In 1981, a U.S. production worker earned an average of $10.97 an hour in wages and fringe benefits. Twenty-six thousand workers earning $438 a week would add more than $592 million in earnings. The Transportation Systems Center estimates that a dollar of lost purchasing power leads to a two-dollar decline in local income. Use of our program to stimulate $781 million in exports could reverse that bleak trend for 26,000 workers and their communities -- adding nearly $1.2 billion to local income. Twenty-six thousand workers who would otherwise curb their purchases and draw down their savings, could once more be consumers and savers.

In describing the benefits to the original equipment suppliers, we have only scratched the surface of new sales and jobs possible under the Plan. Recognition as original equipment suppliers would set off a chain reaction of growth in aftermarket sales and jobs. The Plan is the thin edge we need to break the stranglehold that Japanese manufacturers have on their dealer organizations in the U.S. and overseas markets. This bolstering of our competitive position in the global aftermarket is a feature missing from the local content proposal.

PLAN'S BENEFITS FOR OTHER BASIC INDUSTRIES

We believe domestic auto makers stand to gain a great deal as well under the Plan.

New sales revenues would assure suppliers the capital infusion they desperately need to give U.S. auto makers the technological and competitive edge. The economies of scale gained through original equipment exports and high volume aftermarket production would yield better pricing structures for original equipment and replacements delivered to American car companies.

In addition to cost advantages, U.S. auto producers would benefit from an even more competitive and efficient supplier industry vying for export sales. That competition should be intense, since auto makers seeking the duty savings would select only the best items U.S. suppliers had to offer, and at the best prices. And, a vibrant supplier industry would guarantee auto makers significant delivery advantages, especially by helping companies move to just in time delivery schedules.

The Plan would clearly have a salutary effect on the vital elements of the nation's industrial base that produce the raw materials for American automobile and parts production. As automotive product manufacturers place greater orders with secondary tier suppliers, the resulting economies of scale will again favor car makers seeking reliable, competitively priced commodities.

All of these benefits would contribute to American production of state of the art, competitively priced vehicles -- leading to greater consumer satisfaction and increased demand for domestic cars.

And, whether American consumers choose to buy a domestic or import car, our Plan will keep down the cost of replacement parts.

We believe the Plan is desperately needed for our industry's survival and the restoration of jobs and plant utilization. As we have demonstrated, it would make excellent public policy. To that end, we urge its introduction as legislation and its enactment in the 98th Congress.

INDUSTRY'S INTERNATIONAL AGENDA

While we would prefer that every trading nation adhere to free trade doctrines, we recognize that the real world of international trade does not represent the perfect order. Our Parts Purchase Incentive Plan was fashioned to respond to real world trading conditions and its enactment is of course first on our industry's agenda of policies that would help the automotive supplier industry meet its export challenge. We would like to share with the Committee other areas as well where Congress and the Administration can assist our industry in meeting this challenge.

COUNTERFEITING'S TOLL ON INDUSTRY AND CONSUMERS

Counterfeiters have made a multi-billion dollar business out of stealing the good names of American parts and accessories manufacturers, and stand in the way of our industry increasing its exports. Their nefarious and unfair competition is pushing the world's emerging growth markets beyond our grasp and decimating market shares that took years to build.

We would like to point out, Mr. Chairman, that although we hear a continuing barrage of Japanese attacks on the quality of American automotive products, the fact remains that high quality and good reputation made American firms the world's leading parts and accessories manufacturers, and now render U.S. companies particularly vulnerable to foreign usurpers.

The lion's share of our problems take place overseas, where we lose market share for one reason: price. Counterfeiters' prices are unbeatable, and why not? They are taking a free ride on the good names of American products, without paying for the research, development, quality control and marketing that are reflected in the legitimate item's price.

For the American public, counterfeiting poses many problems: jobs lost to counterfeiters, which in turn creates a general weakening of the economy, and purchases that at best give them a poor return on their money and at worst pose a vicious threat to their safety. But there is more. American leadership in automotive product innovation and invention that American and consumers worldwide have come to expect is threatened in two key ways.

First, illicit sales could cripple a firm's capital position to the point that an aggressive product development program cannot be funded. Second, American companies may decide that the risk of developing the next generation of technologically advanced products -- only to have them expropriated -- is simply not worth taking. Until counterfeiting is checked, we believe risk-taking ventures in our industry will be stymied.

Our vantage point as the representatives of businesses in each link of the automotive product distribution chain has given us insights into the special problems confronting other segment of our industry.

American wholesalers and retailers, for example, are exposed to crippling product liability suits when fake automotive products cause injury in the U.S. The theory of strict liability used in most jurisdictions holds sellers responsible for damages caused by the products they market. However, if they are not at fault, that liability can usually be shifted to the manufacturer. The trouble with counterfeit parts cases is that it is often impossible to find the manufacturers.

If the culprit is located and has no means to pay, or is found to be beyond the reach of U.S. law, then the seller is still considered in the best position to know of the dangers and may be liable for damages. To add to their discomfiture, the sellers are held responsible for tracking down the counterfeiter.

We are sure these businesses share our concern for consumer health and safety. And beyond that mutual concern, there is clearly ample economic incentive to verify the authenticity of the goods they sell. However, given the thousands of different automotive products marketed in the U.S. and a retail volume exceeding $54 billion annually, the most efficient approach is to deter the production of fakes by manufacturers whose clear intent is to deceive or defraud even the most vigilant purchasers.

APAA'S PROPOSED COUNTERFEITING OFFENSE

Counterfeiting has placed American livelihoods, productivity, innovation and safety on the line: a comprehensive response to product piracy is urgently needed. To wage an effective campaign against counterfeiting on both the international and domestic fronts, APAA recommends:

(1) The establishment of an international anti-counterfeiting code under the auspices of the GATT.

This code, similar to forefeiture provisions of the Tariff Act of 1930, would guarantee American trademark owners access to signatory nations' civil and judicial proceedings and foreign government assistance in enjoining and enforcing the forefeiture of counterfeit shipments seeking clearance.

We need this protection now. Once the code is ready for ratification -- we hope by year's end -- we urge our negotiators to redouble their efforts to line up signators. Every nation that makes this commitment to free trade brings us closer to the goal of drying up markets for bogus parts and accessories.

(2) U.S. trade negotiators must get tough with countries hosting counterfeiters. Every means of diplomatic and economic leverage must be used to move other nations to eliminate counterfeiting at its source.

The code's ratification will help shut down signatory nations' markets, but whatever illicit wares cannot be peddled there will only be targeted for less restricted markets. We must negotiate not only with the source countries but also with nations whose doors are wide open to fakes.

(3) We urge the swift enactment of the Trademark Counterfeiting Act of 1983, S.875, to put sharp teeth into federal anticounterfeiting statutes.

The basic protection today imposes only limited sanctions, and no criminal penalties whatsoever, against those found guilty of even the most flagrant trademark infringements. We believe this legislation's sanctions would at last make counterfeiting hazardous to the would-be trafficker.

Not only would the measure make the necessary move to criminalize counterfeit trafficking with commensurately harsh fines and prison sentences, but it also would force violators to hand over to the victims the greater of treble damages or the counterfeiting profits, and the cost of investigating and prosecuting the suit. In addition, federal courts would gain authority to destroy or otherwise remove spurious products from the stream of commerce, thereby denying lawbreakers any profits from their larceny. Moreover, by passing this bill we show how serious the U.S. is about combatting counterfeiting and set an example for other nations to follow in anticounterfeiting legislation and enforcement.

So much is at stake for American entrepreneurs and workers that we believe Congress should make passage of this legislation a priority for 1983.

DISC SUBSTITUTE

The strength of our industry export performance -- until and beyond such time of the Parts Purchase Incentive Plan's enactment -- clearly will depend on industry coping with its international competitors' trading practices, be they fair or unfair. The Domestic International Sales Corporation (DISC) has for years been the one truly valuable export tool available to American industry, with one Treasury Department estimate crediting the DISC for increasing U.S. exports by anywhere from $6.2 billion to $9.4 billion in 1980.

Reports from firms in the automotive products industry underscore the importance of the DISC in boosting their exports. We believe that the DISC contributed to the rapid growth in U.S. automotive parts exports to countries other than Canada -- from $1,014,651 in 1972, the first year of its operation, to $5,067,220 in 1981.

The success of DISC's, which in 1980 handled two-thirds of all U.S. exports, has not gone unnoticed by the European Community. Despite numerous subsidy schemes of their own, the Europeans demanded and won from the Administration a concession to support legislation replacing the DISC -- viewed as a GATT-illegal export subsidy -- with a plan that meets with their approval.

Our first impulse, predicated on our belief that the DISC is consistent with the GATT, is to insist that the DISC not be altered. But, the Administration has acquiesced and the Administration bill is pending in both houses.

At this stage, we would urge that any substitute enacted by Congress meet or exceed the present benefits. In order that any DISC replacement enacted will indeed hold American firms harmless, we believe two key objectives must be met. First, Congress must not tamper with the Administration's proposal to forgive all of the $17 billion accumulated tax deferred income. Our concern is that in a search for revenues, Congress might strip away some or all of the deferrals.

Second, and even more important, is that those small businesses choosing to retain their DISC's under one option of the Administration bill not be subjected to an interest charge on the deferred tax. It would be tragically ironic if the DISC -- which has benefits structured in such a way that small and growing companies benefit the most --

were altered to the detriment of smaller businesses.

We strongly urge that Congress reject any alternative that cannot stand up to the efficiency and effectiveness of the DISC in stimulating exports.

MEETING THE EXPORT SUBSIDIES CHALLENGE

American efforts to curb foreign use of trade distorting export credit subsidies is the one bright spot in the government's otherwise lackluster campaign against foreign subsidies, according to a recent General Accounting Office (GAO) report.

The report gives a great deal of the credit for this progress to broad Congressional interest in appropriating whatever funds are necessary to match foreign subsidies. We applaud the Congress for its willingness to face down those nations who would cheat our industry out of export sales with subsidized, cheap credit.

We believe the Export-Import Bank is on the front line in our struggle against the cut-throat tactics of other nations. Furthermore, we welcome the strengthening of the Ex-Im Bank in the recently passed Senate reauthorization bill. Of special note is the legislation's phased-in requirement for a set aside of 10 percent of Ex-Im funds for small business financing needs.

As part of its expanded small business outreach program, the Bank has changed its definition of small business to the less conservative language used by the Small Business Administration. As representatives of an industry made up primarily of small businesses, we anticipate some positive developments in meeting industry's export financing needs.

We urge that Congress in the exercise of its oversight function ensure that the Bank not let down its guard against any abusive foreign export credit subsidies.

Congress should also direct the USTR to improve its program for challenging GATT-illegal subsidies. Despite the pledges of the GATT Subsidies Code signatories to cut back on these illegal trade practices, there is little evidence of any reduction. Much of the problem, GAO concluded, is caused by USTR's heavy reliance on the private sector to initiate most unfair trade practice complaints. Not only was the USTR found to discourage private complaints and to be painfully slow in their responses, but they have reportedly failed to provide private industry with adequate information on foreign subsidies. The USTR must move immediately to correct these deficiencies. In addition, we urge the Office to self-initiate more Section 301 cases -- thereby showing U.S. resolve to hold our trading partners to their commitments.

AMENDING THE FOREIGN CORRUPT PRACTICES ACT

We have cited the enormous foreign barriers to U.S. exports, but passage of the Business Accounting and Foreign Trade Simplification Act affords us an opportunity to remove trade hindrances imposed by our own government. We wish to thank you, Mr. Chairman, for your leadership in sponsoring S.414, and we heartily support its enactment.

The legislation meets our long standing recommendations that American businesses not be held to stricter codes than foreign laws exact or be hit with criminal penalties for activities of which they have no knowledge. These changes will end the chilling effect that the Act now has on American firms seeking export business.

DOMESTIC POLICY GOALS

APAA recognizes that these vital issues and a panoply of other international trade matters are competing for Congressional and Administration attention. But, we also wish to discuss those issues which must be addressed in the domestic policy arena if we are to effect a full recovery in the automotive supplier sector.

Dramatic changes in domestic auto making pose both problems and opportunities as American parts and accessories manufacturers face the rigors of transition. As American car makers transform more of their lines to front-wheel drive configurations, U.S. suppliers of rear axles, differentials and drive shafts face a permanent decline in demand for their products.

The offsetting opportunity is that a new market has opened for producers of transaxles, constant velocity joints and MacPherson struts. Greater use of sophisticated equipment, including electronic systems for fuel injection, ignition, and engine controls present another growth area. As we have explained, these products merely represent the beginning of Detroit's high technology needs -- needs for which they will be relying on American suppliers' research and development.

The ramifications of this shakeout as cited by the Transportation Secretary's 1981 report on the automobile industry are that "the larger firms have often been able to switch products, but many smaller, single-product suppliers are losing out due to their inability to adapt to the changing market."

NEW PRODUCTION DEMANDS

The measure of any sized supply firm's success in adapting to the new marketplace is a function of its ability to update production facilities. But, industry firms will be hard pressed for the needed capital until such time that they can get a piece of the Japanese automotive equipment action. The Wall Street Journal reports for instance that while the Big Three now use 3,200 robots and plan to have 21,000 in place by 1990, "many automotive suppliers say that as soon as they can afford it, they will buy more robots too."

Indeed, the replenishment of the suppliers' available cash could trigger significant development of plant and equipment, such that could rival any competitor. We would note that older plants in the industrial Midwest -- underused and often portrayed as obsolete -- have been found more likely than newer plants to adopt new technologies, according to research funded by the National Science Foundation. The study investigated the nation's use of new computerized automation production technologies and revealed that the more advanced systems have been introduced most extensively in the Midwest. This phenomenon is credited to the region's large pool of skilled workers. American suppliers and their employees, if given a chance, are especially well poised to succeed in this industrial evolution.

ANTITRUST LAW CHANGES

Companies' plans to upgrade manufacturing processes and develop state of the art products could be facilitated by joint research and development. To that end, we welcome the Administration's recent proposal for legislation to foster cooperation in new technology development.

The core of the National Productivity and Innovation Act of 1983 is a guaranteed immunity from treble damages that firms might otherwise have to pay for engaging in joint R&D ventures. Firms could gain the antitrust exemption by fully informing both the Justice Department and the Federal Trade Commission of any cooperative R&D ventures.

This important change would bring U.S. law on line with the laws of other industrial powers such as Japan, West Germany and France. APAA recommends Congressional enactment of this timely proposal.

We concur with the assessment made by the Commerce Secretary in his 1982 industry report that:

> The expansion of research and development joint ventures by U.S. companies in an acceptable legal form may allow them to take advantage of economies of scale involved in research and enhance their worldwide competitiveness.

Firms whose products are no longer demanded as the automobile's configuration changes might find these joint ventures most beneficial, enabling them to develop new product lines and remain in business.

The Secretary's report explains as well the Commerce Department's new Industrial Technology Partnerships (ITP) program, designed to "facilitate private sector initiative in the near-term (2-4 years) technology commercialization."

The department notes that the major thrust of the ITP program is to help private industry take full advantage of creative mechanisms, such as the Research and Development Limited Partnerships (RDLP's).

We agree with the Secretary's claim that:

> Properly used R&D limited partnerships can be an effective alternative to corporations having to fund R&D from retained earnings, borrowing, or new equity issuance, because

the RDLP's use off-balance sheet funding. Financing is shifted to limited partners who can receive tax benefits, share in the success of the venture through royalties or other forms of payout, and treat all or some of their future income as capital gains. In return, the limited partners and not the technology user bear the financial risk of the R&D program. A general partner, who may be a subsidiary of a major corporation, a brokerage house, public utility, university, or other entity, manages the limited partnership. Antitrust concerns can be minimized as the general partner, and not the limited partners, exercises management control and deals on an arms-length basis with the users or buyers of the technology which the partnership develops.

LABOR'S NEEDS

Rapid changes in industry technology will spell both hardship and new opportunities for supplier industry workers. Automated manufacturing processes will cut labor needs as productivity increases, but will also generate a demand for workers with new skills. Job opportunities will both open and close in relationship to the employers' product lines and ability to flow with changing market needs.

Different material needs for automotive production will also mean certain winners and losers in the secondary tier supplier job market.

We are of course deeply troubled by the uncertain future facing industry workers. Had the Japanese not undermined the supplier industry -- as they persist in doing -- we would not have over one-half million people out of work. Unless the locks come off the Japanese original equipment and replacement parts markets, we fear that the plant gates will remain locked to at least 400,000 of these workers.

TRAINING PROGRAMS

Regrettably, most suppliers do not have the capital to rejuvenate their plants much less to retrain workers. The remedial action we have called for would be a boon to workers in the parts and accessories sector. However, even under the best conditions, industry analysts project some permanent job displacement. National retraining programs therefore have great import.

APAA fully endorses the objectives of the new Job Training Partnership Act program. By directing the training program to target groups -- such as workers who have lost or face job loss due to permanent plant closing; laid-off workers with little chance of returning to work; and the long-term unemployed who are unlikely to find new work -- the Act addresses the needs of workers characteristic of our industry.

Moreover, by placing responsibility for the active management of the programs in the hands of local industry representatives, labor officials, and other interested parties that form the Private Industry Councils (PIC's), we believe the programs will succeed in suiting local needs.

Given a need that clearly outstrips program resources, additional steps are warranted. We recommend Congressional review and enactment of the Vocational and Adult Education Consolidation Act. We find the Administration-backed bill, S.1039, to be a balanced proposal. The salient feature is that the bill has as its principal thrust the retraining of displaced workers. This target group would include those workers whose jobs were lost or are threatened by technological or economic change. The training programs would be tailored to filling jobs that are in demand. And, training programs would also be directed at skilled occupations needed for industrial revitalization and for skills needed to attract new industry.

When one considers the fact that 90 percent of our industry's unemployment is concentrated in proximity to over 75 percent of auto maker production, together with the changing needs of both sectors, it would appear that this legislation and the Job Training Partnership Act (JTPA) program could prove very beneficial in meeting the dictates of industrial rejuvenation.

We recommend vigorous Congressional oversight of all training programs to ensure that all segments of the automotive industry get their fair share. The industry's training needs are very diverse indeed. For the supplier industry alone, training is needed for the production of high technology componentry; workers must learn how to service automated production technology; and new skills must be learned for manufacturing with different materials.

And, once the sophisticated gadgetry is installed, more aftermarket service technicians must be trained to service the new technology. This is reaffirmed by the Transportation Secretary's 1980 report projection that the technologies of the cars of the 1980's "will affect future service, maintenance and repair functions." The reports concludes:

> Large growth is expected in both independent and dealer repair shops equipped with the sophisticated and manufacturer-specific equipment necessary to diagnose and repair the large scale integrated microprocessor technology installed by each manufacturer. To help maintain critical performance standards such as fuel-air ratios, automotive technicians will have to expand their knowledge of state-of-the-art engine diagnostics and service.

Training for this strong growth field should be a primary objective of national training efforts.

CLEAN AIR WARRANTY ROLLBACK URGED

The competitive posture of automotive aftermarket suppliers and independent service outlets -- already imperiled by Japanese trade distortions -- is threatened further by provisions of the Clean Air Act.

Current five year/50,000 mile emission control warranty provisions found in Section 207 of the Act are only one of a multitude of provisions to make sure the car companies comply with new car emission standards, but one which threatens to disrupt the traditional practices and healthy competition within the auto industry.

The potential impact of Section 207 warranties on competition stems from the way the marketplace works in the absence of regulation. In short, there is ample evidence to show that customers who visit new car dealers for warranty work also have non-warranty work performed at the same time. There also is ample evidence that as many as 92 percent of inspection failures occur as a result of the lack of proper maintenance, or other factors not covered by warranty. Warranty terms are quite specific. If a vehicle has not been maintained according to instructions, there can be no legitimate warranty claim.

The problem for the aftermarket follows from these facts. It is not simply that new car dealers get to do warranty work. The artificial distortion of competition -- the true anticompetitive and anticonsumer impact -- stems from the fact that extended emissions warranties result in customers going to new car dealers for work that they learn, too late, is not covered by the warranty. In those cases, the aftermarket loses the opportunity to do both the work not covered by the warranty and the other repair or service work that is done while the customer is at the dealer.

Most of the routine service that new car dealers perform on cars takes place while a commercial warranty is in force. As historical buying patterns demonstrate, dealer repairs and service decline significantly once a commercial warranty expires, and competitive prices and other market factors lead the majority of motorists to the independent aftermarket. In other words, when warranty dictated trips to dealers taper off, dealer performed maintenance and repairs fall drastically.

Mr. Chairman, we urge the introduction and passage of legislation to roll back the warranties to two years/24,000 miles. We believe that cost effective consumer protection can be based on reasonable recall of defective vehicles as required by law, rather than by imposing anticompetitive warranties.

The Clean Air Act also prohibits tampering with the emission control system by both new car dealers and the independent service industry. However, parties affected by that prohibition often have a difficult time understanding what tampering is, and what it is not.

To date, the Environmental Protection Agency (EPA) has only published guidelines that we find woefully inadequate. Confusion over what constitutes tampering, and is therefore subject to a $2,500 fine, is so great that it has had a chilling effect on industry service shops -- leading some to refrain from performing perfectly legal service for fear of getting caught in the tampering trap.

In one scenario spelled out by the Agency, parties would not be held liable for tampering violations, so long a vehicle is not changed from its original equipment configuration. This view, which would prohibit installation of everything except original equipment type parts is totally unacceptable to the aftermarket.

Mr. Chairman, it is high time that this confusion cease. We urge Congress to direct the EPA to issue adequate guidelines that specifically define what constitutes tampering.

PRODUCT LIABILITY REFORM

Chaotic interpretations of product liability laws that vary from state to state and even court to court are hurting automotive parts and accessories manufacturers.

We urge Congressional enactment of the Federal Product Liability Act, S.44, to clear up the inconsistencies and correct the inefficiencies in the present tort system.

The current confusion over product liability causes manufacturers to restrict innovation, and raise prices to cover escalating premiums set under uncertainty by insurance companies.

The key area where the legislation could be enhanced is the incorporation of a 10 year statute of limitations on motor vehicles, parts and accessories and other consumer products. The average age of cars on the road is 6.8 years and most auto parts defects appear in the first two years, so consumer protection would not be compromised but insurance costs could be lowered. We believe that buyers should be required to file suit within a certain time frame except in express warranty situations and other cases where the effects, such as in the case of drugs, could take years to become apparent.

CONCLUSION

In conclusion, we would first like to commend the Committee for its interest in assessing the viability of the American automotive supplier industry and examining the causes and effects of a dramatic industry transition.

We have shown that our industry is a mainstay of the national economy -- in its employment, its domestic output and export performance, and its importance to national defense needs. The competitiveness and productivity of domestic auto makers and other key elements of the nation's industrial undergirding turn on our industry's continued vitality.

Congressional action on the array of policy recommendations we have made -- particularly the enactment of our Parts Purchase Incentive Plan and the rollback of the Clean Air Act warranties -- will see us through this transition and lead to a resurgence of our manufacturing power and the restoration of jobs and plant utilization.

We appreciate this opportunity to present our views and would be happy to answer any questions you may have.

Senator HEINZ. Thank you, Mr. Morris.

I would note for the record that you have submitted a very complete testimony.

Mr. MORRIS. Voluminous.

Senator HEINZ. Not to mention a very vast and even intimidating appendix, which we appreciate. And hopefully we will find the opportunity to make full use of it.

Mr. Seglin.

STATEMENT OF LEONARD SEGLIN, PRESIDENT, INTERCONTINENTAL ECONERGY ASSOCIATES, INC., NEW YORK, N.Y.

Mr. SEGLIN. I am Mr. Seglin, president of Intercontinental Econergy Associates, a specialized engineering consulting firm in New York City.

I thank you for making it possible for me to convey some ideas which might be helpful in recommending appropriate action to revitalize the U.S. basic smokestack industries, returning them once again as a worldwide leader and as contributors to the Nation's economy.

My comments are specifically directed toward the steel industry, but may possibly with proper modification apply to other basic industries.

The background of the plight of the steel industry has been widely discussed and analyzed, and I need not bore you with the sorry details. The bottom line is, the U.S. steel industry cannot compete with many foreign producers in the world market and in too many instances in the U.S. market.

The blame for this plight can be laid to management, labor, and the Government; that is, to every sector of the society except the consumer.

Management lacked the foresight in anticipating external competition and taking necessary steps to meet it. Additionally, management was too cavalier in negotiating labor contracts, since it erroneously felt there was an infinite pit where these costs could be absorbed.

Labor pushed its desire to get more and more without thought as to returning a commensurate quantity for its payment.

Government, because of its unrealistic tax policies which did not permit generation of cashflow necessary to reinvest in more efficient production plants and, hence, maintenance of the industry's competitiveness.

Putting the blame on one and all does little to correct the problem. The only function it may serve is to make us aware that the treatment of the illness will require the active participation of all these segments of society, except the consumer.

Two independent actions are required to revitalize the steel industry of the United States. The short-term actions proposed by others involve correction of foreign trade distortions and reinvestment, possibly with Government help, in modern plant and equipment. The long-term actions proposed here are directed to developing and demonstrating improved technology upon which to build a new steel industry, one which will outproduce and outsell any others. To implement the long-term program, it is recommended that the following actions be taken:

First, establish an industry research and development organization, which I will refer to as the Steel Research Institute, SRI, not to be confused with Stanford Research Institute, just SRI.

SRI's function will be to bring to commercial readiness new technology which will be economically and technically superior to that which is now practiced anywhere in the world. In other words, the objectives are to be attained not by copying others—this mere leads to trying to catch up in a race where you are already far behind—but rather by leaping over the competition and putting them in the role of follower rather than leader.

Second, manage and direct SRI by a team of recognized experts drawn from industry, academia, and government.

Third, fund the SRI in the same manner as similar organizations in other industries. For example, the Electric Power Research Institute, EPRI, is supported by contributions from nearly all of the electric utilities in proportion to their respective sales; and the Gas Research Institute, GRI, which is supported in a similar manner by the gas pipeliners and distributors. Additionally, SRI will receive income in the future by licensing to the industry technology which it will develop under this program.

Fourth, since SRI will not have sufficient income in the beginning to support the necessary program required to achieve its objectives, it will be necessary to provide these funds from other sources. Specifically, it is suggested that SRI receive a loan backed by the good faith and credit of the U.S. Government. This loan should be of a term sufficient to carry SRI to a point where its world income plus annual contributions from the industry will make it self-sufficient.

The responsibilities of SRI will be for the success of the program and accountable to its sponsors, industry, and Government, for the expenditure of the resources made available to it. This should be done in a manner where the sponsors do not impede the progress of the program. A model to follow in this regard could be that of the rubber reserve during World War II. It definitely should not be modeled after, for example, the DOE management of its projects. Some projects were so overloaded with regulations and overseeing and redundancy, that actual time and money required were multiples of what was or should have been expected.

To be successful in the execution of this program, SRI should formulate the necessary R&D program, execute this program in the most expeditious and professional manner, keep the sponsors advised as to progress, maintain an efficient staff, adhere as best as possible to schedules, and do all of this with judicious management of available funds.

SRI should develop the program in close cooperation with independent experts in the field and in the steel industry. The first crucial job for SRI will be to develop such a program and stick with it. The success or failure of the entire project will hinge upon how well this program is formulated. An example of such a thing was given to you in the attached proposal.

There exists today many potentially good ideas upon which to build the required technology. This cannot be used commercially today, since they have not been demonstrated on a sufficiently large scale to assure that they can be successfully scaled up.

Basically, some of these new technologies have considerable potential merit. One of the most important steps in this program will be to examine each of these potential technologies, evaluate their respective merits, and select the most promising for large-scale development and demonstration under the program. After demonstration, then the technical risks can be put aside and the financial risk takes over.

Senator HEINZ. Mr. Seglin, thank you very much. I appreciate your abbreviating your statement, and, without objection, all of it will appear in the record as if you read it in full.

[The prepared statement of Leonard Seglin follows:]

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TESTIMONY GIVEN TO
SENATE FINANCE SUBCOMMITTEE ON ECONOMIC GROWTH
EMPLOYMENT AND REVENUE SHARING
OCTOBER 3, 1983

Mr. Chairman and Members of the Committee

I am Leonard Seglin, president of Intercontinental Econergy Associates, a specialized engineering consulting firm in New York City. I thank you for making it possible for me to convey some ideas to you which might be helpful in recommending appropriate action to revitalize the United States basic "smoke-stack" industries, returning them once again as world-wide leaders and as contributors to the nation's economy.

My comments are specifically directed towards the Steel Industry, but may possibly, with proper modification, apply to other basic industries.

The background of the plight of the Steel Industry has been widely discussed and analyzed. I need not bore you with the sorry details. The bottom line is - "The United States Steel Industry cannot compete with many foreign producers today in the World Market and in too many instances in the U.S. Market".

Blame for this plight can be laid on management, labor and government - that is, on every sector of our society except the consumer.

- Management lacked foresight in anticipating external competition and taking necessary steps to meet it. Additionally, management was too cavalier in negotiating labor contracts since it erroneously felt there was an infinite pit where these costs could be absorbed.
- Labor pushed its desire to get more and more without thought as to returning a commensurate quantity for its payment.
- Government because of its unrealistic tax policies

which did not permit generation of the cash flow necessary for reinvestment in more efficient production plants and hence maintenance of the industry's competitivness.

Putting the blame on one and all does little to correcting the problem. The only function it may serve is to make us aware that the treatment of this illness will require the active participation of all of these segments of society - except the consumer.

Two independent actions are required to revitalize the Steel Industry of the United States. The short term actions, proposed by others, involve correction of foreign trade distortions and reinvestment, possibly with Government help, in modern plant and equipment. The long term actions, proposed here, are directed to developing and demonstrating improved technology upon which to build a new-Steel Industry, one which will out-produce and out-sell any others. To implement the long term program, it is recommended that the following actions be taken:

- Establish an industry research and development organization (which we will refer to as the Steel Research Institute, SRI). SRI's function will be to bring to commercial readiness new technology which will be economically and technically superior to that which is now practiced anywhere in the world. In other words, the objectives are to be attained not by copying others - this merely leads to trying to catch up in a race where you already are far behind - but rather by leaping over the competition and putting them in the role of follower rather than leader.

- Manage and direct SRI by a team of recognized experts drawn from Industry, Academia and Government.

- Fund SRI in the same manner as similar organizations in other industries. For example, the Electric Power Research Institute (EPRI) is supported by contributions from nearly all the electric utilities in proportion to the respective sales of each; and the Gas Research Intitute (GRI) which is supported in a similar manner by the gas pipeliners and distributors. Additionally, SRI will receive income in the future by licensing, to the Industry, technology which it will develop under this program.

- o Since SRI will not have sufficient income in the beginning to support the necessary program required to achieve its objectives, it will be necessary to provide these funds from other sources. Specifically, it is suggested that SRI receive a loan backed by the good faith and credit of the United States Governme This loan should be for a term sufficient to carry SRI to a point where its royalty income plus annual industry support will make it self-sufficient.

RESPONSIBILITIES OF SRI

SRI should be responsible for the success of the program and accountable to its sponsors (Industry and Government) for the expenditure of the resources made available to it. This should be done in a manner where the Sponsors do not impede the progress of the program. A model to follow in this regard could be that of the Rubber Reserve during World War II. It definitely should not be modelled after, for example, the DOE management of its projects. Some projects were so overloaded with regulations, overseeing and redundancy that actual time and money required were multiples of what was or should have been expected.

To be successful in the execution of this program, SRI should:

- o formulate the necessary R&D program.
- o execute this program in the most expeditious and professional manner.
- o keep the Sponsors advised as to progress.
- o maintain an efficient staff.
- o adhere as best as possible to schedules.
- o do all of this with judicious management of available funds.

SRI should develop the program in close cooperation with independent experts in the field and in the Steel Industry. The first crucial job for SRI will be to develop such a program and stick with it. The success or failure of the entire project could hinge upon how well this program is formulated.

An example of such of program is illustrated in the attached Proposal. Other approaches should be considered and evaluated carefully before execution of this Project.

TECHNOLOGICAL CONSIDERATIONS

There exist today many potentially good ideas upon which to build the required new technology. These cannont be used commercially today since they have not been demonstrated on a sufficiently large scale to assure that they can be successfully scaled up. Basically, some of these new technologies have considerable potential merit. One of the most important steps in this program will be to examine each of these potential technologies, evaluate their respective merit, and select the most promising for large scale development and demonstration under this program.

Some of the candidate approaches are:

o Improvement in capital productivity by reducing investment for an integrated steel operation through:

  + elimination of investment in coke for ore reduction by:

    - direct reduction through use of hydrogen and/or carbon monoxide made from non-coking coal.

    - direct use of non-coking coal for smelting.

  + continuous rather than batch steel making.

  + continuous rather than batch casting.

  + make it economically possible to use lower grade ores, thereby eliminating the need for ore beneficiation

o Improvement in raw material efficiency and cost by:

  + more efficient heat recovery systems.

  - + elimination of processing steps, e.g. coke, ore beneficiation, etc.
  - + use of lower price raw materials, e.g. non-coking coal, lower grade ores, etc.

- o Improvement in labor productivity by:
  - + use of continuous rather than the present batch operations.
  - + system simplification through elimination of process steps, as coke production, etc.
- o Reduction in other operating costs such as:
  - + refractory maintenance made less because of continuous operation rather than batch.
  - + electric power consumption reduced by substitution of blast furnace by direct reduction, etc.

SUMMARY

In summary, it is proposed that a long range Research, Development and Demonstration Program be implemented by a Steel Industry Co-operative, referred to as SRI. SRI would be supported by each Steel Company, possibly on a fixed toll per ton of steel each company produces. In order for SRI to execute the massive program needed to overtake foreign technology, assistance from the United States Government through loan guarantees would be required - the Industry does not have the funds to fill the gap. These loans would be paid back, after some reasonable time, from the royalty income generated by licensing of the technology to the Steel Industry of the United States. SRI would have the authority and responsibility for defining and executing the necessary program to meet its objectives, which, in a nutshell, are to develop the necessary technology to place the Steel Industry in the United States in the lead world-wide.

Thank you.

Senator HEINZ. At this point I am going to indicate to you gentlemen a series of questions I would like to ask you, but I am not going to have time, because of scheduling difficulties, to take all of your answers at this point on the record. I would appreciate it if you would be able to submit your answers to us for the record.

Starting with Mr. White of the Railway Progress Institute, I would appreciate your comments on the extent to which you think S. 1543, Senator Durenberger's bill, sufficiently addresses the need to stimulate research and development in basic industry, including more efficient methods of production in your industry. And I am familiar, I am sorry to say, with many of the plants that you mentioned in your testimony. I was in fact at the Abex plant when it opened.

Second, also for you, Mr. White, I would appreciate your analysis of Senator Durenberger's legislation, in how it might bring about lower hurdle rates of return for the investment that may be necessary in the railroad equipment industry.

To Mr. Morris of the Auto Parts & Accessories Association, you have made a strong case for regulatory relief. I would note that the President has constituted one or more task forces that are supposed to deal with this issue. I would appreciate your enumerating where those task forces have been successful in making recommendations, where they have been unsuccessful in coming to grips with problems you still see, where no action has been taken what you would give your highest priority. Although, I did note that you singled out auto emissions in particular in an area of your testimony.

I would also appreciate your answering the question of whether incentives for research and development in your particular industry would be of value, either in the form of a standard tax credit for research and development or in the form of other Government-support R&D, and if so what those forms might be.

Mr. Seglin, in the case of your recommendations for the steel industry, I would appreciate knowing the extent to which the steel industry is supportive of your idea. And, second, it would be useful to know whether the two examples that you mentioned, the Electric & Gas Research Institutes, have been successful. Also, do you believe there are any significant differences between joint efforts in regulated industries, such as the public utilities, and nonregulated industries, such as steel.

Gentlemen, I apologize that I don't have time to take answers to those and probably some other questions for the record. I thank you all for being here.

Mr. Seglin, do you have a comment you want to make?

Mr. SEGLIN. Yes. When do you want these answers?

Senator HEINZ. Within about 2 weeks. Would that be sufficient?

Mr. SEGLIN. Would you give me an extension? I will be out of the country for the next month.

Senator HEINZ. Your extension is hereby granted.

Mr. SEGLIN. Thank you.

And we will accommodate others with difficulties as well. Are there any final comments?

[No response.]

Senator HEINZ. Gentlemen, thank you very much.

Mr. WHITE. Thank you.

Mr. **Morris**. Thank you.

Mr. **Seglin**. Thank you.

Senator **Heinz**. Our last panel consists of Terry Magi, of Printing Industries of America, and James Currie, on behalf of the National Machine Tool Association.

Would our witnesses please take their seats?

Mr. Nagi.

Mr. **Nagi**. Yes, sir.

Senator **Heinz**. Please proceed.

STATEMENT OF TERRY NAGI, EXECUTIVE VICE PRESIDENT, PRINTING INDUSTRIES OF AMERICA, INC., ARLINGTON, VA.

Mr. **Nagi**. Thank you, Mr. Chairman.

I am executive vice president of the Printing Industries of America. PIA is the Nation's largest graphic arts trade association, with nearly 11,000 member companies worldwide. These members range from small one-person composition firms to companies with over $1 billion in sales and thousands of employees. Our comments today are also presented in behalf of the National Association of Printers and Lithographers, representing nearly 3,000 graphic arts companies.

The printing and graphic arts industries in the United States consists of over 50,000 companies with an average work force of 25 employees each. While printing is the Nation's seventh largest manufacturing industry, it is the largest in terms of number of establishments. We feel this lack of concentration in our industry is one of our great strengths. The competition is often fierce, with success going to those firms that stay appraised of trends in the marketplace and abreast of new technologies.

To say the least, printing is one of the Nation's most basic industries. One only has to look around this room to appreciate how important the transmission of words and information onto paper is to our everyday lives. The fact that much of the information before you is photocopied, including our testimony, gives you a hint as to the recent dramatic changes that have reshaped our industry.

Today I would like to highlight several trends that are dramatically altering the print communications industry. My remarks will be brief so that I will have time to answer any questions you may have.

The integration of the technologies of global satellite communications, telecommunications, microelectronics, and the computer is changing society at ever level and contains some very direct implications for the printing and graphic arts industry. This technological change has been the industry's most pervasive focus over the past decade, as electronic applications have begun to change the nature and structure of our industry.

The industry was historically craft oriented and labor intensive, but today it has become technician oriented and capital intensive. Firms with the foresight and capital to take advantage of the new technologies are experiencing high annual growth rates; while many who did not improve their technologies over the past 5 or 10 years no longer exist. This trend will continue as new technologies develop and existing ones are refined at an increasingly rapid rate.

Consolidation in the industry has slowly come about in past 5 years and will continue as new pieces of equipment with improved applications have greater production capacities and require much larger market and customer bases to support them.

It is probably over the next few years that firms in the industry will become clustered at two ends of a spectrum with not much in between. At one end will be firms with sales in excess of $100 million annually, primarily engaged in longrun press production and finishing operations, with some providing total integrated electronic publishing services. The other cluster will be firms in the $2 to $35 million annual sales volume range specializing in instant information processing, data retrieval and transmission, high quality color preparation work, specialty production and service functions, shortrun targeted print pieces, and some other traditional sheet-fed production. There will be some firms smaller than $2 million in sales primarily providing product or service specialties, retail consumer printing, and support to larger organizations as independent contractors.

As these transitions occur, gross printing production is projected to continue increasing at a rate equal to the annual growth in the GNP. However, proportions of product mix will likely change significantly. As with all major shifts in product and service markets, particularly where technology is a major influence, there will be big winners and big losers. The most important challenge for today's printing firm is to adapt to changing markets, changing workforce trends, and changing technologies.

While technological change has always been a part of our industry, the difference today is that the adjustments are far more frequent. With these rapid changes, an unprepared worker may face obsolescence and despair as a final reward. These changes also have a tendency to break jobs down to their simplest components. Any time you divide a process into specific segments, you tend to create the type of assembly line that leads to a lack of identification with the product or service being produced. One of the real challenges to the management of our industry as we move toward increased technological improvement will be to insure that our employees know and understand their contribution to the final product. The successful manager is going to have to be willing to share part of the decisionmaking process with lower levels within the organization. The printing company of the future is not only going to look different but it is going to be staffed with more highly educated and more technical individuals. Our challenge is going to be to take these new technocrats and insure their integration into the organization. This will require an employer commitment to education and retraining, and management flexibility.

As technology advances, it is apparent that substantial changes will occur in the way information is produced, transmitted, and processed. It is clear that information in the form of the printed page will be but one of a number of the options available to people. Progressive printers and publishers are realizing that they are in a business much more extensive and important than just producing information with ink on paper.

Cable television, global satellite transmission, teletext, videotext, video cassette or disk, and other technologies, are already beginning to affect a number of traditional print markets. This will only accelerate in the future. Rather than fighting this trend, however, many printers are expanding into these developing new markets. Just as Sears has begun to broaden its role in the retail business by expanding into the financial service industry, many printers are becoming full-service communications providers.

Mr. Chairman, our 600-year-old industry is entering a new age. In spite of recent economic difficulties, the printing industry is healthy, with the prospects good for more rapid growth in the future.

We hear many concerns raised in other industries about the negative impact of high technology on their ability to survive, yet the printing industry welcomes these new technologies.

We hear concerns about the loss of jobs that will result from technological change, yet the printing industry expects to face a shortage of skilled workers in the future. We hear about the need for an industrial policy that would target financial resources toward sunrise industries, yet in our industry winners and losers are identified every day in the marketplace, and we would resist any effort to change that.

Outside of the areas of job training, taxation, and a few parochial issues, our major legislative concern is to preserve the competitive marketplace so that our industry can continue its growth and success. In that effort, we urge your cooperation and assistance.

Thank you very much.

[The prepared statement of Terry Nagi follows:]

TESTIMONY OF
THE PRINTING INDUSTRIES OF AMERICA
AND
THE NATIONAL ASSOCIATION OF PRINTERS AND LITHOGRAPHERS

Mr. Chairman, members of the Committee, my name is Terry A. Nagi. I am Executive Vice President of the Printing Industries of America. PIA is the nation's largest graphic arts trade association with nearly 11,000 member companies worldwide. These members range in size from small one-person composition firms to companies with over a billion dollars in sales and thousands of employees. Our comments today are also presented in behalf of the National Association of Printers and Lithographers, representing nearly 3,000 graphic arts companies.

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It is probable over the next few years that firms in the industry will become clustered at two ends of a spectrum with not much in the middle. At one end will be firms with sales in excess of $100 million annually, primarily engaged in long-run press production and finishing operations with some providing total, integrated electronic publishing services. The other cluster will be firms in the $2-35 million annual sales volume range in instant information processing, data retrieval and transmission; high quality color preparation work; specialty production and service functions; short-run targeted print pieces and some other traditional sheet-fed production. There will be some firms smaller than $2 million in sales primarily providing product or service specialties, retail consumer printing and support to larger organizations as independent contractors.

As these transitions occur, gross printing production is projected to continue increasing at a rate equal to the annual growth in the GNP. However, proportions of product mix will likely change significantly. As with all major shifts in product and service markets, particularly where technology is a major influence, there will be big winners and big losers. The most important challenge for today's printing firm is to adapt to changing markets, changing workforce trends and changing technologies.

While technological change has always been a part of our industry, the difference today is that the adjustments are far more frequent. With these rapid changes, an unprepared worker may face obsolescence and despair as a final reward. These changes also have a tendency to break jobs down to their simplest components. Any time you divide a process into specific segments, you tend to create the type of assembly line that leads to a lack of identification with the product or service being produced. One of the real challenges to the management of our industry as we move towards increased technological improvement will be to insure that our employees know and understand their contribution to the final product. The successful manager is going to have to be willing to share part of the decision-making process with lower levels within the organization. The printing company of the future is not only going to look different, but it is going to be staffed with more highly-educated and more technical individuals. Our challenge is going to be to take these new technocrats and insure their integration into the organization. This will require an employer committment to education and retraining, and management flexibility.

As technology advances it is apparent that substantial changes will occur in the way information is produced, transmitted, and processed. It is clear that information in the form of the printed page will be but one of a number of the options available to people. Progressive printers and publishers are realizing that they are in a business much more extensive and important than just producing information with ink on paper.

Cable television, global satellite transmission, teletext, videotext, video cassette or disk and other technologies are already beginning to affect a number of traditional print markets. This will only accelerate in the future. Rather than fighting this trend, however, many printers are expanding into these developing new markets. Just as Sears has begun to broaden its role in the retail business by expanding into the financial service industry, many printers are becoming full service communications providers.

Mr. Chairman, our six hundred year old industry is entering a new age. In spite of recent economic difficulties, the printing industry is healthy, with the prospects good for more rapid growth in the future.

We hear many concerns raised in other industries about the negative impact of high technology on their ability to survive, yet the printing industry welcomes these new technologies. We hear concerns about the loss of jobs that will result from technological change, yet the printing industry expects to face a shortage of skilled workers in the future. We hear about the need for an industrial policy that would target financial resources toward sunrise industries, yet in our industry, winners and losers are identified everyday in the marketplace and we would resist any effort to change that.

Outside of the areas of job training, taxation and a few parochial issues, our major legislative concern is to preserve the competitive marketplace so that our industry can continue its growth and success. In that effort, we urge your cooperation and assistance.

Thank you very much for the opportunity to testify.

Senator HEINZ. Mr. Nagi, thank you very much.

Mr. Currie, who I am delighted to see here, because he is from my home State of Pennsylvania—Erie, Pa., to be specific.

We are delighted that you have been able to come down and share with us the thoughts of the Machine Tool Builders' Association.

Mr. Currie.

STATEMENT OF JAMES A. CURRIE, SR., PRESIDENT, ERIE PRESS SYSTEMS, REPRESENTING THE NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION

Mr. CURRIE. Thank you, Mr. Chairman. I have a little bit of a cold, but I think I can manage it.

My name is James A. Currie. I am the president of Erie Press Systems in Erie, Pa. I am a director of the National Machine Tool Builders' Association, on whose behalf I am appearing this morning. Accompanying me today are James H. Mack, NMTBA's public affairs director, and Charles P. Downer, NMTBA's industrial preparedness representative.

Mr. Chairman, we commend you for taking the initiative to examine the causes and effects of the unmistakable decline which today pervades many of our Nation's basic industries. As you well know, most of these industries are facing a painful transition.

By whichever industrial barometer one would care to use, machine tool production clearly constitutes a basic industry. An extensive overview of the industry appears in our written statement. I will summarize that overview by simply saying that the machine tool industry is the cornerstone of the manufacturing process, including virtually all facets of military production. Without machine tools, industry cannot begin to produce the vastly increased quantities of military equipment that mobilization would require. Every ship, plane, tank, missile, transport vehicle, and other armament used by our Armed Forces, as well as essential elements of the supporting civilian infrastructure, including all other machinery, are manufactured on machine tools. Moreover, the production of sophisticated modern weapons increasingly requires high technology machine tools, because the computer controls on such tools can assure the precise tolerances necessary for successful operation of the finished product.

Our written statement documents that orders, shipments, and employment have each dropped dramatically in the past 2 years. The reasons for this decline are varied and complex, certainly. The recent economic downturn and the decline of the Nation's rate of capital spending resulting from it have played a significant role. Even more significant however is the phenomenal influx of imported machine tools. Since 1964, America's imports of foreign machine tools have increased sixfold, from 4.5 percent of total consumption 19 years ago to 27 percent in 1982, based on value. As a share of units, that is, machines actually installed, imports accounted for nearly 43 percent of U.S. consumption in 1982, and orders for U.S. machine tools fell by 50 percent from the previous year.

The fact that we are losing an increasingly larger share of our domestic machine tool market to imports each year is, by itself, cause for concern. But perhaps even more disturbing is the changing character of that market share. Our testimony indicates that it is increasingly comprised of more technologically advanced and defense-sensitive equipment. Therefore, on March 10, 1983, NMTBA filed a petition under the national security provision of the trade laws with the Secretary of Commerce, seeking trade relief in the form of temporary quotas upon metal cutting and metal forming machine tools imported into the United States. These quotas are intended to achieve specific national security objectives—restoration of the health of the domestic machine tool industry, and expansion of its mobilization capacity.

Mr. Chairman, the American machine tool industry is confronted with both a deep depression and demand, an almost unstoppable tide of subsidized imports, and a monstrous amount of machine tools overhanging the market in the form of huge domestic inventories of foreign machine tools. In these circumstances, imports pose a serious deterrent to new investment in the U.S. machine tool industry. Such investment is critically needed to improve the industry's productivity and capacity and to bolster its research and development efforts. In the absence of such investment, the U.S. industry cannot maintain its technological prestige, which remains second to none in the world, and which is now being strenuously challenged.

Most importantly, current import trends dictate that this country runs almost a certain risk of becoming foreign-source dependent on machine tools. Such a development would be especially disturbing in light of the fact that, notwithstanding the loyalty of our overseas friends and allies, Japan and West Germany simply could not be counted on as reliable suppliers during a large-scale conventional war.

Industry recognizes the challenge that must be met and overcome if we are to maintain a competitive edge. Toward that end, the industry has already undertaken and will continue to undertake a variety of initiatives designed to strengthen and expand its production base. These initiatives include better motivation and training of employees, capital investment, research and product development, increased responsiveness to customers, agressive domestic marketing strategies, and export promotions.

In sum, Mr. Chairman, we all have a vested interest in restoring the health of this very basic industry. Our national security depends upon it.

Thank you, and we would be happy to answer questions.

[The prepared statement of James A. Currier, Sr., follows:]

STATEMENT BY
JAMES A. CURRIE, SR.
PRESIDENT
ERIE PRESS SYSTEMS
REPRESENTING THE
NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION
BEFORE THE
SUBCOMMITTEE ON ECONOMIC GROWTH,
EMPLOYMENT AND REVENUE SHARING
COMMITTEE ON FINANCE
UNITED STATES SENATE
OCTOBER 3, 1983

I. INTRODUCTION

Good morning, my name is James A. Currie. I am the President of Erie Press Systems in Erie, Pennsylvania. I am a director of National Machine Tool Builders' Association (NMTBA), on whose behalf I am appearing this morning. Accompanying me today are James H. Mack, NMTBA's Public Affairs Director and Charles P. Downer, NMTBA's Industrial Preparedness Representative. NMTBA is a trade association consisting of over 287 American machine tool manufacturing companies, which produce approximately 85 percent of the machine tools made in the United States.

Mr. Chairman, we commend you for taking the initiative to examine the causes and effects of the unmistakable decline which today pervades many of our nation's basic industries. As you well know, most of these industries are facing a painful transition. We join you in recognizing that a number of very difficult issues must be squarely addressed in order to make that transition a productive one. We are pleased to be a part of this forum, and hope that our comments this morning will be helpful to the Subcommittee in its assessment of the future of basic industries in the United States.

By whichever industrial barometer one would care to use, machine tool production clearly constitutes a "basic" industry. An extensive overview of the industry appears later in this statement. I will summarize that overview by simply saying that the machine tool industry is the cornerstone of the manufacturing process, including virtually all facets of military production. Unfortunately, the machine tool industry has in no way been immune to the general state of decline which currently characterizes many basic domestic industries. The past two and one-half years have been years of retrenchment for the machine tool industry -- sustained decline following six years of strength. As this statement will document, orders, shipments and employment have each dropped dramatically.

The reasons for this decline are varied and complex. Certainly, the recent economic downturn and the decline in the nation's rate of capital spending resulting from it have played a significant role. Even more significant, however, is the phenomenal influx of imported machine tools. Since 1964, America's imports of foreign machine tools have increased six-fold from 4.5% of total consumption 19 years ago to 27% in 1982, based on value. As a share of units (that is, machines actually installed), imports accounted for nearly 43% of U.S. consumption in 1982. And, orders for U.S. machine tools fell by 50% from the previous year. The fact that we are losing an increasingly larger share of our domestic machine tool market to imports each year is, by itself, cause for concern. But perhaps even more disturbing is the changing character of that market share -- our testimony will indicate that it is increasingly comprised of more technologically advanced and defense-sensitive equipment.

Clearly, the machine tool industry is a "basic" industry which is vital to the defense of this country and its ability to respond in the event of a national emergency. NMTBA, therefore, firmly believes that the American machine tool industry can -- that it must -- regain its competitive edge. We would like to take this opportunity to share with the Subcommittee our view of how this can best be accomplished.

Mr. Chairman, we recognize and appreciate your understanding of the serious competitive problems that arise when an industry such as ours is faced with an unprecedented and ever-rising tide of imports. You have referred to "meaningful import relief" linked with an industry's preparation of "an adjustment plan to solve its other problems." That is precisely the formula that NMTBA believes is necessary to ensure the machine tool industry's continued competitiveness.

On March 10, 1983, NMTBA filed a petition under the National Security provision of the Trade Laws (19 U.S.C. §1862) with the Secretary of Commerce seeking trade relief in the form of quotas upon metal-cutting and metal-forming machine tools imported into the United States. More specifically, NMTBA requests a five-year regime of quotas limiting imports in each of the two broad sectors of machine tools to 17.5% of domestic consumption, measured by value. To preserve the domestic industry's capability to produce the complete range of major types of machine tools, NMTBA further requests that separate quotas be applied within these broad sectors so that imports of specific types of machine tools cannot exceed twenty percent of annual domestic consumption of each of 18 product types. In establishing and applying the quotas, care must be taken to ensure that they cannot be circumvented by the importation of unassembled machine tools or component parts in quantities that would effectively undermine the relief granted.

NMTBA also suggests that the government may wish to consider implementing the quotas on a monthly or quarterly basis to minimize the risk that foreign producers will disrupt the market by shipping a full year's quota to the United States early in the year. Imports of machine tools of one or more of the 18 product types would be permitted at levels between 17.5 percent and 20 percent of domestic consumption so long as the level of imports of other types was less than 17.5 percent of domestic consumption, provided that the sales-weighted average value of imports did not exceed 17.5 percent of domestic consumption in either the metal-cutting or the metal-forming sector.

These levels of quotas are intended to achieve specific national security objectives -- restoration of the health of the domestic machine tool industry and expansion of its mobilization capability -- as discussed below. The quotas are expressed in terms of value, instead of units, to prevent foreign producers from effectively increasing their market share by concentrating their shipments to the United States in the highest-priced models.[1] It should be noted, however, that the quotas requested do not confine importers to any fixed dollar value of imports during the five-year period. Instead, they would allow importers to participate proportionately in any increase in U.S. consumption of machine tools.

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[1] Should it be proposed instead that the quotas be expressed in terms of units, it would be appropriate to divide the permitted number of units into different value categories.

II. DESCRIPTION OF THE MACHINE TOOL INDUSTRY

Machine tools are power-driven machines, not hand held, that are used to cut, form or shape metal. All machine tools can be broadly classified in either of the two principal families or sectors of machine tools: metal-cutting machine tools and metal-forming machine tools. These two sectors in turn encompass numerous types or categories of machine tools defined by their function and method of operation.

There are six basic categories of metal-cutting machine tools: drilling machines, milling machines, boring machines, turning machines (*i.e.*, lathes), grinding and polishing machines, and sawing machines. Additionally, there are various types of special purpose metal-cutting machines that are based on these categories. Examples are machining centers, which combine drilling, milling and boring operations, and gear-cutting machines, which are special purpose milling machines. Another example, station-type machines, are machines that perform different metalworking operations at a succession of locations or "stations."

There are also six basic categories of metal-forming machine tools: punching machines, shearing machines, bending machines, forging machines, die-casting machines, and presses.

Metal-cutting machine tools. Among the metal-cutting machine tools, turning machines are distinct in that they operate by applying a stationary cutting edge to a rotating workpiece held in a chuck or similar device for the purpose of manufacturing a round product. Milling machines employ a rotating "cutter" to cut the surface of a stationary workpiece. Drilling and boring machines cut holes of various sizes in a workpiece. Grinding and polishing machines employ a grinding wheel to remove metal from a workpiece that may be either round or flat. Sawing machines saw metal to a desired design or cut a piece of metal from rough stock for further work.

Metal-forming machine tools. Metal-forming machine tools shape metal by applying force to it. Punching machines stamp designs out of sheet metal with the use of cutting dies. Shearing machines cut sheet metal with a blade that is applied to the metal with force. Bending machines bend sheet metal into cylinders, arcs and angles. Presses apply great force to bend, cut or punch metal. Forging machines compress pre-heated metal into a desired shape using dies. Die-casting machines inject molten metal into a die set to produce a complex shape by casting.

Uses of machine tools. Machine tools are capital goods used extensively in manufacturing articles comprised substantially of metal. For example, each automobile, locomotive, airplane, farm machine, appliance and most articles of military hardware require substantial machining on machine tools.

Machine tools also have an important, albeit indirect, role in the manufacture of numerous nonmetal products. For example, the pipes, valves and tubes required for chemical refineries are made on machine tools, as are the machines used to weave textiles and to process timber into lumber and other finished-wood products. In short, machine tools make numerous products including other machines and are the fundamental element of industrial production.

Size of the industry. The critical importance of machine tools for industrial production cannot be gauged by the size of the machine tool industry itself. The total production of machine tools in the United States during 1982 was $3.6 billion, which represented 0.12 percent of the gross national product. The last Census of Manufactures shows that in 1977 the machine tool industry was made up of 1,285 companies comprising 1,345 establishments, with industry employment then totaling 83,200. Nearly two-thirds of the establishments had fewer than 20 employees.

In both the metal-cutting and metal-forming sectors the 20 largest companies in the sector accounted for approximately 55 percent of sector shipments and the next 30 largest companies accounted for slightly over 20 percent of sector shipments. The industry is concentrated in the North-East and North-Central states.

Technological change. Like many other industries, the machine tool industry has been substantially affected by changes in technology and in manufacturing processes. These changes have implications for national security that are not, in the present state of affairs, reassuring. First, certain major customers of the machine tool industry have in recent years tended to order machine tools that are highly specialized in their uses and thus less easily adaptable to other uses. Such loss of flexibility harms our mobilization potential. Second, advances in technology have made it possible to produce sophisticated and more flexible machine tools (*e.g.*, computer- or numerically-controlled ("CNC" or "NC") machining centers) that are required to make many products (such as modern weapons systems) involving new kinds of metals, tighter tolerances and greater complexity. In these circumstances, any foreign threat to the United States' technological leadership carries with it the risk that our national security will become dependent on foreign technology and sources of supply.

Cyclicality of demand. A longstanding characteristic of the machine tool industry that unfortunately shows no sign of changing is the extremely cyclical demand for machine tools. The level of orders for machine tools is determined primarily by industrial propensities to invest in capital goods; these propensities vary from sector to sector and from time to time. Financial and operating conditions, such as profitability, business confidence and the current and projected levels of capacity utilization, combine with changes in the economy-wide cost of capital and other factors to produce the complex lag relationship between demand on machine tool buyers and demand on machine tool builders. Fluctuations in demand and industry shipments have often been abrupt, as Figures 1, 2 and 3 show. Figure 3, showing the industry's shipments, includes the Department of Commerce's estimate of 1983 shipments.[2]

The economic behavior of machine tool producers has been fundamentally affected by the cyclicality of their industry.

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[2] U.S. Department of Commerce, Bureau of Industrial Economics, 1983 U.S. Industrial Outlook for 250 Industries with Projections for 1987 (1983) (hereinafter 1983 Commerce Outlook).

Because of such cycles, the industry has tended not to invest in new capacity until the long-term need for such capacity becomes reasonably well established. To do otherwise would be to invest capital that would be unproductive during downturns in the industry's cycles and hence would produce, over the entire cycle, an inadequate return on investment. The industry has also sought to buffer its cycles by accumulating new orders during periods of strong demand and filling such orders during periods of slack demand. This policy minimizes layoffs of the skilled workers on which the industry depends and rationalizes production schedules. The result, however, has been that increases in new orders have been accompanied by lengthening lead times.

Among other results, the industry's cycles have: (1) made a high debt-equity ratio imprudent, if not impossible, in light of the attitude of lending institutions toward debt-service coverage during downturns in the business cycle, (2) required the industry to offset losses during bad years by achieving or attempt- ing to achieve compensatory profits during good years, and (3) restricted the industry's ability to expand its production rapidly in response to increases in new orders.

The relatively small size of the companies comprising the United States machine tool industry and the constraints that its cyclicality imposes on their financing and operation have made this industry, and the enormous American market that it primarily serves, vulnerable to targeting by foreign governments. These governments have recognized, and have exploited, the competitive advantages that can be attained in this market by subsidized and governmentally-organized foreign companies.

III. THE ESSENTIALITY TO THE NATIONAL SECURITY OF A STRONG DOMESTIC MACHINE TOOL INDUSTRY IS AS GREAT TODAY AS IT HAS EVER BEEN

In our Petition we have shown that: (1) machine tools are critically -- even uniquely -- important to the national security because a strong and immediate surge capability in the production of machine tools is necessary to sustain a protracted large conventional war; (2) the Department of Defense has recognized that the U.S. must be prepared to fight and win, thereby to deter, a protracted large conventional war; (3) imported machine tools are threatening to reduce significantly U.S. machine tool production capacity when the national security requires augmentation of that capacity; and (4) imports have displaced and are continuing to displace machine tool production capacity from the U.S. to locations overseas, especially Japan, from which supplies would probably be seriously disrupted during a long conventional war. Significant authorities have confirmed that the essentiality of the U.S. machine tool industry to the national security is as great today as it has ever been.

A broad range of machine tool types is critical to the national security, as is indicated by the reinstituted Machine Tool Trigger Order Program of the Federal Emergency Management Agency. White the Program does not assist the domestic machine tool industry in any way prior to the formal declaration of a national emergency, and does not presently contemplate contracts for more than a small fraction of the machine tools that would be needed during a large conventional war, it clearly indicates FEMA's determination that many types of machine tools are critical to the national security. The Program encompasses machining centers (23 percent of the total program), boring machines (10 percent), gear cutting machines (7 percent), grinding machines (10 percent), automatic turning -- *i.e.*, bar and chucking -- machines (5 percent), turning machines -- *i.e.*, lathes (17 percent), metal forming machines (23 percent) and other machine tools (5 percent).

In its report issues earlier this year, the Machine Tool Panel of the National Academy of Engineering observed that "economic and military dependencies upon machine tools are extensive and are important reasons for the maintenance of a vigorous machine tool industry," that "national security is . . . linked to the performance of the industry [because t]he manufacture of defense weaponry depends in no small measure upon applicable machine tool capacity," and that . . ." [i]ncreased dependence on foreign sources for machine tools could potentially adversely affect the U.S. military effort by disrupting supplies and thereby reducing the U.S. capability to meet increased military production demands in times of national emergencies."[3] The Machine Tool Panel concluded that "it would be hard to overestimate the importance to the nation of a healthy domestic machine tool industry."[4]

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[3] National Academy of Engineering, "The Competitive Status of the U.S. Machine Tool Industry," p. 7 (1983).

[4] *Id.* at 73.

Similarly, a study published recently the the Industrial College of the Armed Forces observed that "[a] healthy production equipment industry [including machine tools] is a key factor in the Nation's ability to maintain a healthy economy and an adequate mobilization base."[5] Indeed, an entry in General Dwight D. Eisenhower's diary for June 14, 1951, reflects his frustration with machine tool shortages during the Korean War:

> There seems to be a bad shortage of machine tools. When we get over this emergency I am going to take as one element of my personal ambitions, that of preaching of the need for machine tools as part of military preparation until some d--- administration will take the necessary measures. I've heard the same story time after time and it seems to me we should learn."[6]

Even the German Machine Tool Builders' Association acknowledges that "there is no doubt about the importance of machine tools to a strong defense and deterrence," that "[t]he armaments required to quarantee national security are produced to a large extent by converting and machining metal," and that "[m]achine tools obviously play a key role in this process."[7]

Similarly, the Commission of the European Communities recently stated elsewhere that "[t]he machine tool industry holds a key position in the production systems of the development countries," that "[i]t is . . . at the centre of the capital goods, transport equipment and arms industry," and that "its function within industrial structures makes its role crucial for at least two reasons, these being its link with the armaments industries and its capacity to transfer technological progress."[8] Accordingly, the Council of Ministers of the European Communities have stated as their policy that "the machine tool industry and, more generally, the automatic plant industries ('robotics') are strategic sectors in which the development of technical and economic relations which would put the [European] Community in *a situation of dependence must be ruled out from the outset*."[9]

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[5] R. L. Vawter, Industrial Mobilization: The Relevant History, p. 34 (National Defense University Press, 1983).

[6] R.H. Ferrell, ed., The Eisenhower Diaries, p. 195 (Norton, 1981).

[7] Comments of the German Machine Tool Builders' Association, pp. 11, 13.

In a recent essay, Paul Seabury, professor of political science at the University of California at Berkeley, emphasized that the position taken by the European Communities has a special legitimacy when embraced by the United States:

> "Even if the logic of comparative advantage is followed and the results prove beneficial by the test of prosperity, still the contrast between the claims of prosperity and the requisites of strength must always be borne in mind. *The doctrine of comparative advantage has never been a respecter of the security of nations, as Adam Smith himself recognized. To be sure, some nations that seek comfort rather than security in their policies can repose their destinies, with reasonable hope of safety, in the hands of others more powerful than they. . . . A great power cannot afford this luxury.*

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[8] Commission of the European Communities, The European Machine Tool Industry -- Commission Statement: Situation and Prospects, Feb. 8, 1983, pp. 1, 9, 10.

[9] *Id.* at 58 (emphasis added).

> The definition of what the defense industry is must naturally take into account not merely current and end-product industrial performance and time schedules for procured weapons, but also the nature of an industrial base that must exist at all times for the undertaking of large-scale, bold, and swift strategic mobilization. *Such an industrial base cannot be regarded as identical with an industrial base designed for the most effective competitive industries in a world market, nor with one largely conceived so as to maintain supremacy in futurist high technology.*[10]

The increasing importance of the West's ability to sustain a major conventional war was recently emphasized by the flag officers, diplomats and academicians from NATO countries who comprise the Steering Group of the European Security Study. In a published report, the Steering Group observed that "[t]he Warsaw Pack currently has superiority in its conventional forces against NATO,"[11] that "[t]he Soviet conventional military threat is serious and growing,"[12] and that "[r]ecent Soviet writings argue that the successful implementation of Soviet military strategy may allow a war [between East and West] to be kept conventional."[13] The Report concluded that "[w]ith strategic nuclear parity, the main threat to peace and to NATO is the offensive potential of the large and steadily increasing Soviet and Warsaw Pact conventional capabilities in Europe, governed by a strategy and operational concept that emphasize surprise, speed, intensive firepower, and numerical superiority,"[14] and that "[t]he need for attention to NATO's conventional defensive capability . . . has acquired new urgency in recent years."[15] "[I]nsist[ing] on the necessity for NATO to seek to reduce its present degree of dependence on a possible early recourse to nuclear weapons to deter a Soviet conventional attack,"[16] the Steering Group recommended that "NATO and its members can and should take prompt steps to improve their conventional defensive military capabilities . . . [for the purpose of] deterring possible aggression and reassuring the NATO peoples."[17]

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[10] P. Seabury, Industrial Policy and National Defense, *Journal of Contemporary Studies*, vol. 6, pp. 9-10, 12 (Spring 1983) (emphasis in part in original).

[11] European Security Study (ESECS), *Strengthening Conventional Deterrence in Europe: Proposals for the 1980s*, p. 12 (St. Martin's Press, 1983.

[12] *Id.* at 18.

[13] *Id.* at 13.

Assurance of prompt access to greatly increased quantities of machine tools in the event of mobilization is essential to this nation's conventional deterrence posture and its ability to sustain fighting during a large conventional war. Only a robust domestic machine tool building industry can provide that assurance.

The inadequacy of Japan's defense efforts, and hence the danger of increasing reliance on Japan as a supplier of machine tools in time of war, has recently been highlighted. In June 1983, the Department of Defense reported to Congress that:

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[14] *Id.* at 33.

[15] *Id.* at 8.

[16] *Id.* at 9.

[17] *Id.* at 11.

> Japan . . . has never been willing to address defense expenditures from the point of view of actual requirements. The 1983-1987 Mid-Term Defense Plan (MTDP) is a good example. Japan's Ground Self-Defense Force has obsolete equipment. Its Ground, Maritime and Air Force all have only token levels of ammunition, making them *unable to sustain themselves in combat and therefore unable to defend Japanese territory against any serious incursion. The Air and Maritime Forces are tool small to provide for defense* against the large air threat which proximate Soviet Far East Forces pose and to protect the sea-lanes to 1,000 miles, respectively. . . . *The MTDP is inadequate to make Japan's present forces sustainable* and to build the requisite levels of Air and Maritime Forces.[18]

That report observed that "[t]he United States has great hopes that . . . Prime Minister [Nakasone] will translate his words [promising a substantial strengthening of Japan's defense] into action and give Japan true self-defense capability,"[19] and the Liberal Democratic Party's substantial victory in late June elections bolstered those hopes.

However, Japan subsequently dashed those hopes by limiting its 1983 military budget increase to 6.88 percent,[20] a preliminary "cap" that is "almost certain to be whittled down substantially" during the remaining course of Japan's budgetary process.[21]

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[18] Department of Defense, A Report to the U.S. Congress on Allied Contributions to the Common Defense, June 1983, p. 55 (emphasis added).

[19] *Id*.

[20] *The Wall Street Journal*, July 13, 1983, p. 34.

[21] *The Washington Post*, July 13, 1983, p. A15.

The paltry increase is "one of the lowest in two decades, [and] will make it 'virtually impossible' for Japan to meet weapons procurement plans outlined under its current five-year military buildup program,"[22] i.e., the "MTDP" that the Department of Defense has found to be deficient. Thus the Japanese have retreated from their own already inadequate defense goals. The only permissible conclusion is that the extreme inadequacy of Japan's defense will continue indefinitely. If attacks upon Japan's manufacturing, transportation and energy supply infrastructure take place concurrently with a major attack of the Warsaw Pack on Western Europe, American forces could not be relied upon to provide an adequate, immediate response in protection of Japan. Consequently, Japan must be considered a vulnerable, and therefore unreliable, wartime trading partner.

Notwithstanding the loyalty of our overseas friends and allies, it would be seriously imprudent to rely on them as suppliers of machine tools during a large conventional war. The Commerce Department's recent report on its Section 232 investigation of the "Fastener" industry,[23] found that foreign manufacturers would be reliable suppliers during wartime. This finding is an aberration from the Department's previous finding in a Section 232 investigation[24] and conflicts with the very recently expressed position of the Secretary of Defense. It should be repudiated.

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[22] Id., quoting "a prominent defense analyst."

[23] Department of Commerce, The Effect of Imports of Nuts, Bolts, and Large Screws on the National Security, February 1983 (hereafter, "Fasteners Report").

[24] Investigation of Imports of Glass-Lined Chemical Processing Equipment, 47 Fed. Reg. 11,746 (1982). In that report, the Department stated that "under a full mobilization condition (transoceanic) shipping losses are estimated to be extensive." Id. at 11,753.

The finding of import reliability in the Fasteners Report results from reliance on an outdated war scenario issued for stockpile management purposes and confirmed in 1975.[25] This scenario was no doubt based on even older data and world conditions. The scenario prescribes a "5-20 percent worldwide interdiction of shipping" during wartime and "specifies that shipping losses from the major exporting countries in Asia would be minimal."[26] Apparently no attempt was made in the Fasteners investigation to update the 1975 scenario to reflect subsequent major increases in Soviet naval and air forces.[27] That the 1975 scenario is dangerously outdated was made clear shortly after the conclusion of the Fasteners investigation, when the Secretary of Defense reported that "[t]he Soviet Union's greatly improved fleet gives it a capability to conduct an interdiction campaign against our shipping and naval forces in the Atlantic, Indian Ocean and

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[25] Fasteners Report at 62.

[26] Id. at 54, 61.

[27] NMTBA does not suggest that the Department was at fault in using the 1975 scenario in the Fasteners investigation. The Department of Defense has only recently announced its program to create detailed wartime scenarios that were previously nonexistent. See Annual Report of the Secretary of Defense to Congress, Fiscal Year 1984, pp. 262-64. Moreover parts of the 1975 scenario other than that which addresses import reliability may not be outdated. The key fact, however, is that petitioners in this case, unlike those in the Fasteners Case, have demonstrated that, with respect to import reliability, the 1975 scenario is outdated and unfit for use.

Northern Pacific."[28] If the U.S. machine tool industry is further weakened, so that imports of overseas-made machine tools would be critical to the sustenance of the U.S. war effort, our enemies could be expected to deploy their interdiction capabilities against transoceanic shipping as a matter of high priority.

The complete failure to consider disruptions of imports as a result of factors other than interdiction on the high seas is another fundamental defect in the approach to import reliability followed in the Fastener Report. These factors are destruction of ports, airports, internal transportation facilities and factories by aerial attack or sabotage, destruction and loss of access to energy supplies and the use of military force to intimidate.

Notwithstanding the strong friendship between Japan and the United States, Japan is so seriously underdefended relative to the military significance of its industrial might that there is a very real possibility either that the Japanese industrial base would be seriously damaged at the outset of a major war, or that the Persian Gulf and Indonesian sources of Japanese energy supplies would be destroyed or shipments of such supplies would be interdicted, or that Japan would be intimidated into a position in which it would be forced to deny its militarily significant products to the West and might be required to provide them to the East.

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[28] Annual Report to Congress of the Secretary of Defense, Fiscal Year 1984, February 1983, p. 26.

Unfortunately, while Japanese leaders freely utter soothing, generalized statements, their willingness or ability to support such statements with deeds is at best questionable. As The Wall Street Journal recently observed, "[P]rime [M]inister [Nakasone's] own rhetoric . . . can sound very different depending on the audience. Last January in Washington, Mr. Nakasone promised to build Japan into an 'unsinkable aircraft carrier.' But in late May, while campaigning for his party for upper-house parliamentary elections, Mr. Nakasone pledged to hold Japan's defense spending within 1% of gross national product, the self-imposed limit Japan has followed since 1976."[29] The gulf between words and deeds is similarly indicated by the Japanese Government's latest White Paper on defense. The White Paper calls for "improvements in the [Japanese] armed forces and stronger defense cooperation with the West" but does not "specify what the government would do" to achieve these ends, "[n]or did it call for any new defense spending."[30]

In a large conventional war West Germany would be a principal land theater and would almost certainly suffer major disruption of its industrial establishment. Similarly, if the free world entrusts to an essentially undefended Japan the crown jewels of its industrial and technological base, it is nearly certain that the Soviet Union would employ some means to deny the United States access to Japan's assets during war.

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[29] The Wall Street Journal, July 13, 1983, p. 34.

[30] The Wall Street Journal, Aug. 29, 1983, p. 18.

Moreover, because our adversaries may have the advantage of surprise, it is likely that import disruptions will be greatest at the outset of a large conventional war, which is when machine tools would be needed most, to expand military production. Ultimately in the course of war -- if the U.S. has sufficient machine tools to produce the weapons needed to replace battlefield attrition -- clear air and naval superiority over key sea lanes may be established, Germany may be liberated, the bombed industrial establishment of Japan may be rebuilt, and the mines and submarines cleared from its coastal waters. At that time, the freedom of transoceanic trade might be essential to replace depleted stockpiles of critical commodities, but the belated availability of imported machine tools would be far less important than early availability in determining the outcome of the conflict.

IV. THE CONDITION OF THE U.S. MACHINE TOOL INDUSTRY REMAINS DEPRESSED AND IMPERILED

The United States machine tool industry is severely depressed. Current data on orders, shipments, employment, profits, capital formation and capacity utilization all point to the conclusion that the industry is experiencing unprecedented strains -- strains that cannot safely be assumed to be a result of the business cycle.

1. New orders. The leading indicator of the health of the machine tool industry is "net new orders," defined as aggregate new orders minus cancellations of outstanding orders. Machine tool orders are placed primarily by the metalworking industries during times when firms anticipate plant expansions or the replacement or

upgrading of existing capital equipment. They form the basis for machine tool builders' plant utilizations, financial planning, capital outlays and manpower deployment.

Figure 4 shows the precipitous drop in the last four years in net new orders for machine tools. From the first quarter of 1979 through the fourth quarter of 1982, the constant-dollar value of net new orders plummeted by over 84 percent, reaching a level of $105 million as of the fourth quarter of 1982. The plummeting of the net new-order figures reflects the simultaneous occurrence of a dramatic reduction in the number of new orders placed and a sizeable increase in the cancellation rate on outstanding orders. To put this decline in perspective, net new orders for 1982 on a constant-dollar basis amounted to approximately half the value of orders placed in 1975, when the industry was at the bottom of its preceding business cycle.

2. Shipments. Similarly, as shown in Figure 5, the constant-dollar value (1972 dollars) of machine tool shipments has declined over the past three years from a peak of $503.5 millions in the fourth quarter of 1979 to a level of $266.8 million in the third quarter of 1982, the latest quarter for which data are available. This represents an aggregate decline of 47 percent.

The decline in value of shipments is less than the decline in value of net new orders during the same period only because the industry has been building and shipping machine tools to fill accumulated orders. As these outstanding orders have been filled, however, the industry's backlogs have been reduced, as Figure 6 shows, and future shipments will necessarily fall to a level corresponding to the low level of new orders. Conversely, when there is an upturn in net new orders, there will be a lag of several months before there will be a corresponding upturn in shipments.

The collapse in demand for domestic machine tools has had predictable adverse effects on the industry' health: among other things, employment has fallen dramatically and capital spending plans have been deferred or cancelled. Equally ominous for the future, the industry' profits, sustained until recently by shipments in fulfillment of outstanding orders, have now fallen or are projected to fall to the point that United States government financial analysts give the industry the lowest ranking of 212 industry groups for 1983 and private securities analysts are advising their clients to avoid investing in the industry. These adverse effects are discussed below.

3. Employment. Employment statistics are another indicator of the severity of the downturn in the machine tool industry. Figure 7 shows total industry employment annually for the years 1972 through 1979 and monthly for the years 1980 through 1982. In December 1975, at the bottom of the last recession, the total employment in the industry was 82,800. Five years later, at the peak of the next cycle in April of 1980, the industry's employment had grown to 110,200. Since then, however, employment has fallen sharply to 68,600 as of December 1982, the latest month for which figures are available. This represents a 37.7 percent decline in employment -- a loss of more than 41,000 jobs -- in less than two and one-half years. Total employment thus stands at a

level substantially below the level that was reached at the bottom of the last cycle.

Figure 8 breaks out separately the industry's total employment of "production workers" annually for the years 1972 through 1979 and monthly for the years 1980 through 1982.

This category, which excludes employees engaged in sales, service and administrative occupations, includes the skilled machinists and other production employees whose training and experience are essential to any mobilization effort. Employment of those workers has fallen 46.2 percent from a peak of 73,700 in April of 1980 to 39,600 as of December 1982.

The decline in employment of production workers is proportionately greater then the decline in overall employment and has reached into the ranks of workers with relatively high levels of seniority and competence. Industry management is deeply concerned about the implications of this development for the industry's competitive position. The quality of the industry's products depends to a substantial extent on the competence of its production workers. Skilled production workers who are laid off and then find other jobs will be reluctant to return to a cyclical industry that is seriously threatened by imports. The training of replacement workers typically takes two to four years. In the meantime, production efficiency and product quality are likely to suffer, thereby further eroding the industry's competitive position.

Nor does the foregoing employment data fully reflect the depressed state of the domestic machine tool industry. Many workers who remain on the payroll are working short weeks; seven-hour days and four-day weeks, for example, are common.

4. Capacity utilization. The operating rate of capacity utilization rate measures "[t]he ratio of physical output to physical capacity."[31] Figure 9 records the operating rate for the nonelectrical machinery industry annually for the period 1972 through 1979 and monthly for the years 1980 through 1982 as reported in the long-standing McGraw-Hill surveys.[32] As Figure 9 shows, capacity utilization as of December 1982 was 62.2 percent, its lowest point in the history of index.[33] Understandably, numerous plants have been or are being closed, resulting in a permanent loss of production capacity. In the Cleveland area, for example, among major machine tool builders both Acme-Cleveland Corporation and Warner & Swasey Company (a subsidiary of Allied/Bendix) have recently closed plants and offered them for sale. Among other publicly-held companies, Ex-Cell-O Corporation and Cross & Trecker Corporation, both based in Detroit, have recently announced plant closings.

The nonelectrical machinery industry encompassed by the McGraw-Hill report is broader than the machine tool industry, but its operating rates are considered to be fairly representative of those experienced by the machine tool industry over a full business cycle.

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[31] The McGraw-Hill Dictionary of Modern Economics (2d ed. D. Greenwald 1973), p. 412.

[32] McGraw-Hill Publishing Company, Department of Economics, "McGraw-Hill Operating Rates Report" (monthly).

[33] In January 1983 the McGraw-Hill index dropped to a new all-time low of 62.1 percent.

5. Industry profits. Figure 10 shows the industry's pre-tax profits as a percentage of sales for the years 1972 through 1982.

Figure 11 shows for the years 1972 through 1982 the industry's pre-tax profits expressed as a return on gross assets. Figures 10 and 11 document the fluctuations in the industry's profits and the sharp drop in those profits in 1982. The profit outlook for 1983 is even worse.

The risks of investing in the machine tool business are reflected by the uncertainty of the industry's earnings performance over the years. Even under normal conditions, earnings fluctuations in this industry are greater than those experienced by manufacturing industries generally. With imports now holding a large and increasing share of the market, the risks of investing in the machine tool industry are accentuated. Unless the projected returns on investment are high enough to compensate for those risks, managers cannot justify decisions to reinvest. Conglomerate parent corporations engaged in other lines of business, will invest their capital elsewhere.

6. Capital investment. Not surprisingly, in view of the substantial decline in new orders, shipments and profits, the industry's constant dollar net capital investment fell off perceptible in 1982. As shown in Figures 12 and 13, the industry's net new investment in 1982 was inadequate even to cover the depreciation of existing plant and equipment, resulting in a decline in net plant and equipment on hand.

7. Research and development. Figure 14 shows the industry's aggregate expenditures for research and development for the years 1972 through 1981.

Figure 14 illustrates that the industry has held fairly steady through 1981 in its research and development expenditures. In the circumstances now facing the industry, however, it is far from clear that this trend will continue. Clearly, any significant decline in -- indeed, any failure to increase -- R & D expenditures would have ominous implications regarding the industry's future competitiveness.

8. Industry outlook. The Department of Commerce has ranked the machine tool industry dead last among 212 industry groups in its forecast of product shipments for 1983. According to the Department of Commerce, the constant-dollar value of shipments in 1983 of metal-cutting machine tools made by United States manufacturers is expected to decline to $950 million, which is 34.3 percent below the already severely depressed level of 1982;[34] similarly, shipments of metal-forming machine tools are expected to decline to $260 million, which is 30.1 percent below the 1982 level.[35] The Commerce Department expects these declines to result in further lay- offs in 1983 of 10.3 percent in the metal-cutting production workforce and 6.2 percent in the metal-forming production workforce.[36]

Notwithstanding the apparent end of the recent recession, the outlook for the machine tool industry bears out these gloomy projections. In 1982, overall business expenditures by manufacturers in the United States on new plant and equipment, such as machine tools, declined 6.9 percent below the real level of such expenditures in 1981.[37] Such expenditures declined by 8.2 percent in the case of manufacturers of durable goods -- which include many purchasers of machine tools -- and by 5.6 percent in the case of manufacturers of nondurable goods.[38] Significantly, United States manufacturers as a whole are still operating at just slightly more than two-thirds of capacity,[39] and "[t]raditionally, the upturn for machine tools comes when capacity use [in manufacturing industries] hits 80% . . . ."[40] As a result, real fixed investments by United States manufacturers are expected to fall another 5 percent during 1983.[41] The only leading economic indicator announced on March 2, 1983, that continued to fall was "the level of contracts and orders for business plant and equipment."[42]

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[34] 1983 Commerce Outlook, supra, at 20-2 (shipments are expressed in 1972 dollars).

[35] Id. at 20-3.

[36] Id. at 20-2, 20-3.

Even if the hoped-for decrease in world oil prices materializes and the promising economic news of the last two months matures into a strong and sustained national economic recovery, it is unrealistic to assume that the growth of the United States economy in

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[37] "Plant and Equipment Expenditures, Quarters of 1982 and First and Second Quarters of 1983," 62 Survey of Current Business 32 (December 1982).

[38] Id.

[39] Federal Reserve Statistical Release G.3(402) (December 1982).

[40] "Industrial Equipment and Services," Forbes, p. 130 (Jan. 3, 1983).

[41] "Plant and Equipment Expenditures, Quarters of 1982 and First and Second Quarters of 1983," supra, at 33.

[42] The Washington Post, March 3, 1983, p. A12 (citing U.S. Department of Commerce, Composite Indexes of Leading, Coincident and Lagging Indicators).

1983 will, by itself, bring new life to the machine tool industry. For the reasons stated earlier, the recovery of a capital goods industry like machine tools lags months behind a strong upturn from a recession. And, ironically, a strong economic recovery among the manufacturing industries that are the primary purchasers of machine tools may not benefit the United States machine tool industry in 1983. This follows from the enormous inventories of imported machine tools presently sitting in United States warehouses.

If, in response to a buoyant economy, machine tool purchasers seek immediate delivery, they will obviously prefer imports that can be delivered from stock. United States machine tool builders, by contrast, are financially unable, for the most part, to manufacture and carry substantial machine tool inventories. In short, there is a real danger that imports may enjoy the lion's share of the economic recovery, at least in the short term, and in the process expand their share of the United States market even further.

Moreover, in 1983 the United States machine tool industry cannot expect to compensate for the anticipated serious decline in domestic sales by expanding its exports to foreign markets. In 1982 the export market for United States machine tools weakened considerably due to world-wide economic stagnation and a strong U.S. dollar. Exports of approximately $615 million in 1982 were off by 40 percent in comparison with 1981, a decline even greater than the decline in the industry's overall shipments. Most forecasters project little or no growth in the economies of the industrialized Western nations during 1983. Consistent with this analysis, the Department of

Commerce estimates that exports of United States machine tools will decline by more than 30 percent in 1983.

Only recently have new orders indicated that the U.S. machine tool industry is gradually emerging[43] from the nadir of its worst recession in decades.[44] Even so, "machinery orders are far from buoyant."[45] The continuing gravity of the industry's condition has been recognized by Eli S. Lustgarten, Vice President of Paine Webber Mitchell Hutchins and a respected securities analyst of the machine tool industry. In recent congressional testimony, Mr. Lustgarten noted that during the first half of 1983, orders continued "at about the same low level of demand as 1982 . . . declining new orders and a sharp increase in the cancellation rate resulted in an 82% decline in the industry backlog to $950 million at the end of the second quarter of 1983 from the peak level in excess of $5.5 billion at the turn of the decade."[46]

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[43] In July 1983, new orders for machine tools were "63 percent higher than the extremely depressed $106.6 million of a year earlier." The Wall Street Journal, August 29, 1983, p. 4. In June 1983, new orders rose 15.4 percent above the low level of new orders in June 1982. The Wall Street Journal, July 25, 1983, p. 4. In May 1983, new orders were 28 percent above the year-earlier level. American Metal Market, June 27, 1983, p. 4. In April 1983, new orders were 21 percent below the year-earlier level. The Wall Street Journal, May 31, 1983, p. 6.

[44] For example, as of May 27, 1983, Cincinnati Milacron, Inc., the U.S. industry leader, and Acme-Cleveland Corp. had sustained three consecutive quarterly losses, Gleason Works had sustained five, and Brown & Sharpe Corp. had sustained six. Value Line (Machine Tools), May 27, 1983, p. 1344. In their annual reports for 1982, Textron (Annual Report, p. 40), White Consolidated Industries (Annual Report, p. 9) and Lodge & Shipley (Annual Report, p. 4) reported losses on the 1982 operations of their machine tool segments. This trend is unlikely to have abated in the interim, because "shipments of machine tools in July [1983] fell to the lowest levels in more than ten years. . . .," The Wall Street Journal, August 29, 1983, p. 4, and machine tool builders receive payment upon shipment.

[45] The Wall Street Journal, August 29, 1983, p. 4.

It is probable that a substantial upturn in this capital goods industry will not occur until 1984[47] and that 1983 will be a year of continued substantial losses for most U.S. machine tool companies.[48] Mr. Lustgarten recently observed that "[t]he bottom line [for the U.S. machine tool industry] is that machine tool manufacturers will lose money in 1983 and perhaps through the first half of 1984 with plant closings, layoffs and severe price discounting commonplace."[49] He added that "[t]he current decline in machine tool demand is likely to be one of the sharpest and longest corrections of the post WW II era."[50]

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[46] Statement by Eli S. Lustgarten before the Subcomm. on Economic Stabilization of House Comm. on Banking, Finance and Urban Affairs, July 26, 1983, p. 1 (hereafter Statement by Eli S. Lustgarten, July 26, 1983). Elsewhere, Mr. Lustgarten has stated his view that "the recent buoyant action of machine tool stocks is based on wishful thinking." New York Times, June 8, 1983, p. D-10.

[47] The Wall Street Journal has reported:

> Chief White House economist Feldstein warns that high interest rates and the strong dollar will crimp some industries and keep the recovery uneven. Exporters face persistent trouble selling abroad. Interest rates will continue to curb construction and sales of much business equipment. One analyst sees no significant gain in capital spending for six to nine months." Id., July 15, 1983, p. 1.

The Washington Post recently reported that, while new orders for machine tools in June 1983 were up nearly 50 percent from the level in January 1983, many "customers are either postponing delivery on existing orders or writing new orders with unusually long-term delivery schedules, apparently to avoid paying for the machinery until interest rates drop and cash flow improves and until demand for their products picks up and makes the new manufacturing equipment necessary." Id., August 25, 1983, p. C3. The article observes that "machine tools are not paid for until they are delivered" and that "[s]imply placing an order costs virtually nothing." Id. the Conference Board recently reported that its survey of business executives shows that, while "[b]usiness confidence in the second quarter [of 1983] soared to its highest level in the seven-year history of [the] survey . . ., 72 percent of the respondents did not revise their capital spending plans and 11 percent actually lowered them. . . ." American Metal Market, July 18, 1983, p. 15.

During this depression in the industry, a formidable expansion of the share of U.S. machine tool consumption attributable to imports, particularly those from Japan, continues. In 1982 in he United States, consumption of machine tools declined by 23 percent, but total consumption of import machine tools declined by only 9 percent.[51] Not only did imports fare relatively well in the U.S. market, but, the total business of key foreign producers fared significantly better than the business of U.S. producers in the current world machine tool recession. While the U.S. suffered a decline in total shipments of 29 percent in 1982, Japanese production declined by 9 percent, and West German production declined by 5 percent.[52]

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[48] "As a whole, the U.S. machine tool industry will operate at a loss in 1983." U.S. Department of Commerce, Bureau of Industrial Economics, "A Mid-Year Review of the Outlook for 1983," June 1983, p. 18.

[49] Statement by Eli S. Lustgarten, July 26, 1983, p. 2.

[50] *Id.*

[51] *American Machinist*, February 1983, p. 77.

[52] *American Machinist*, February 1983, p. 77.

Now that the lead times of American machine tool producers are short,[53] Japanese producers are pursuing what appears to be a relentless campaign to increase their already significant share of the U.S. machine tool market by offering, on a regular basis, deep discounts below their list prices and extremely generous financing terms. In recent testimony before the International Trade Commission, the chairman of Acme-Cleveland Corporation stated that "[a] representative example is provided in a letter that the president of Lodge & Shipley recently sent to the Commission, which describes a recent sale by the Japanese Yamazaki Machine Tool Company at a 28 percent discount off list price, with a six-month cost-free trial period and then 10 percent down and five years to pay with 4 percent interest."[54]

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[53] In April 1981, the order backlog of the U.S. machine tool industry was approximately $5 billion. In April 1983, it was $989 million. New York Times, June 8, 1983, p. D-10. It was recently reported that "[d]efense contractors note there is up to a one-third improvement in the delivery times by domestic machine tool makers." American Metal Market, August. 22, 1983, p. 20. The director of plant engineering at McDonnell Aircraft Company, Tulsa, stated that "the delivery time from U.S. machine tool manufacturers has improved considerably. In some cases it's down to six months. The machine tool builders have been able to meet the delivery schedule quoted to us.'" Id. A spokesman for the fabrication division of the Boeing Company, Seattle, stated that "'there is much better delivery and availability from U.S. machine tool builders, who are on schedule with no delivery problems.'" Id.

[54] Testimony of W. Paul Cooper before the International Trade Commission, June 28, 1983, p. 7. The ITC's recent survey of purchasers of machine tools indicates that as "the reason for purchasing foreign-made machine tools, price was ranked number one." Statement of Commissioner Haggart, Transcript of Proceedings, Hearings in re Competitive Assessment of the U.S. Metalworking Machine Tool Industry (No. 332-149), International Trade Comm'n, June 28, 1983

(footnote cont'd.)

V. THE PETITION CONFRONTS AN IMPORT TREND THAT PRESENTS A VERY SERIOUS THREAT TO THE U.S. MACHINE TOOL INDUSTRY'S SHORT-TERM SURVIVAL AND LONG-TERM HEALTH

NMTBA's Petition was not prompted by a temporary glut of imports. Instead, it confronts an aggressive, abrupt thrust, primarily by Japanese manufacturers, aimed at domination of the U.S. and foreign markets for NC machine tools, which are not merely a niche but instead are, and for the foreseeable future will continue to be, the heart of the U.S. machine tool market. This thrust began in 1978-81, when Japan exploited, with prompt deliveries of import machine tools, the long backlogs of U.S. builders, which were swamped by an unusual and largely unanticipatable short-term acceleration of demand. Today, the Japanese thrust is powered by the extreme price discounting and unmatchable financing terms described above.

Foreign domination of the NC machine tool market is likely to have serious long-term consequences for the health of the U.S. industry, because NC machine tools are in the course of establishing a predominance in the U.S. market, now in the stand-alone machine tool market -- in which NC machine tools represented over 36 percent

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(hereafter "June 28 ITC Hearings"), p. 62. Recently, the Japan Economic Institute of America, a registered agent of the Japanese Government, took the position that "Japanese builders of numerically controlled lathes and machining centers . . . were no more successful in generating new business than their American counterparts, despite the availability of deep discounts, creative financing deals, and other generous sales incentives." JEI Report No. 21A (June 3, 1983), pp. 2-3 (emphasis added). "[P]rice cutting [in the machine tool industry] has been devasting . . . [and] rampant." New York Times, June 8, 1983, p. D-10.

of consumption in 1982[55] -- and in the future as the core of flexible manufacturing cells and systems.

The market for NC machine tools today consists almost exclusively of "stand-alone" machines that are not part of an integrated system. When capacity utilization rises in the companies that are machine tool industry's customers, however, it is probable that many companies will begin to replace older machine tool layouts with state-of-the-art flexible manufacturing cells or systems, in which computer-integrated NC machine tools are the most important component. A flexible manufacturing system also includes controls, computer software, materials handling systems and, in some applications, robots. Together these ancillary elements account for a substantial part, perhaps a majority, of the value added to the FMS. Without its core of integrated NC machine tools, however, an FMS is worthless because it cannot perform the cutting and forming operations for which it is installed.

The advantages of FMS -- greater productivity through automation and the flexibility to adapt to market changes that come from the ability to make smaller batches economically -- give rise to predictions that the market for FMS will grow from a small figure today to as much as $1 billion by 1990.[56] This anticipated growth involves the bright hope of new business but also a future challenge to the industry's stability, because a significant part of the growth of the FMS market will occur at the expense of the existing market for non-flexible automation -- i.e., dedicated, high-volume transfer line machine tool assemblies -- which have remained almost unaffected by imports. It is essential to the long-term health of the larger U.S. machine tool companies, which account for a majority of the industry's capacity, that they secure a major participation in the supply of NC machine tools and ancillary equipment, software and services that will be demanded by the incipient FMS market.

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[55] Testimony of W. Paul Cooper before the International Trade Commission, June 28, 1983, p. 3.

[56] *Id.*, p. 9

United States machine tool builders remain the technological and sales leaders in the infant FMS market. In very few instances do U.S. machine tools presently lag behind the technology of foreign producers. Such technology lags, where they occur, are limited to highly specialized equipment.

The Japanese Ministry of International Trade and Industry, for example, recently acknowledged that their best machining centers are technologically inferior to the best machining centers made by U.S. builders, even though in 1982 Japanese machining centers accounted for 37 percent of U.S. consumption as measured by value and 63 percent as measured by units. According to MITI's report, the product technology level of Japanese machining centers is substantially inferior to that of American machining centers because the Japanese are "considerably behind the U.S. . . . in spindle speeds, maximum allowable torque, main motor output and cutting efficiency."[57] The report adds that "[i]n precision machinery technology, . . . Japan is behind the U.S. and West Germany" and that "Japan is also behind the U.S. in design technology, where the U.S. is pouring effort into CAD/CAM."[58] MITI also concluded that Japan is inferior to the United States with respect to the production of package software.

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[57] Metalworking Engineering and Marketing, May 1983, p. 82

In addition, American FMS technology is unexcelled. "At the end of 1981, there were only 25 truly flexible systems operating in the world, (two thirds of which were in the U.S.)."[59] Hughes Aircraft Company recently put in operation an FMS built in the U.S. by Cross & Trecker for the production of aircraft and missile parts. "[M]anagement mandated that the most modern, state-of-the-art equipment would be provided," and although "Hughes has no 'buy-American' policy, . . . all bidders were U.S. firms."[60] More recently, the Watervliet Arsenal awarded a $15.3 million contract to the Manufacturing Systems Division of White Consolidated Industries for installation of a state-of-the-art FMS.[61] Representatives of the U.S. machine tool industry have strenuously affirmed the preeminence of U.S. builders in FMS technology and NC machine tools generally.[62]

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[58] Id.

[59] Statement by Eli S. Lustgarten, July 26, 1983, p. 15.

[60] American Machinist, May 1983, pp. 109-11.

[61] American Metal Market, August 22, 1983, p. 17

[62] Testimony of Richard T. Lindgren, President and Chief Executive Officer, Cross & Trecker Corporation, before the International Trade Commission, June 28, 1983, p. 2; Testimony of Michael W. Davis, President, White-Sundstrand Machine Tool Company, before the International Trade Commission, June 28, 1983, p. 6.

But there is a real danger that, as with NC stand-alone machine tools -- whose technology the U.S. industry invented and commercialized -- this market may be lost to low-priced foreign competition. If foreign imports succeed in the short-term in establishing a dominant position in the U.S. market for NC stand-alone machine tools, they will be in an excellent position to take a commanding share of the FMS market. If this happens, major parts of the U.S. machine tool building industry will be gravely and permanently debilitated. Therefore, the recovery of strength in NC stand-alone machine tool markets in the near term is a prerequisite for the industry's long-term health.

The trend that will probably develop in the U.S. machine tool industry if the requested relief is denied has already appeared in tentative but unmistakable form. That trend is for foreign suppliers, particularly the Japanese, to supply the NC machine tools for the American market, while American companies supply some of the controls, robots, computer software and engineering design services used with the machine tools in FMS and similar applications. In other words, while American firms would supply technical services and some equipment ancillary to machine tools, the core of the factory automation systems -- the NC machine tools -- would come predominantly from abroad. If this trend is realized, it will esult in a very major displacement of U.S. machine tool manufacturing capacity.

The very early stages of this trend are indicated by Bendix's recent announcements that it is closing or selling seven of its U.S. machine tool plants,[63] including a new plant in Nashville, Tennessee,[64] and is transferring production of all of its lathe parts and its NC chuckers, including its newest turning machine, to Japanese factories.[65] At the same time, pursuant to an agreement with Toyoda Machine Works, Ltd., Bendix will sell Japanese-made machining centers in the United States under the name "Bendix-Toyoda."[66] Similarly, the National Acme division of Acme-Cleveland Corporation recently announced that the state-of-the-art NC chucking machine that it developed jointly with Mitsubishi Heavy Industries, Ltd., will be produced in Japan for the indefinite future, although the machines will bear the National Acme label and Acme-Cleveland will retain the option to produce the machines in the U.S. The New Britain Tool Division of Litton Industries, Inc., will market in the U.S. numerically controlled vertical precision lathes produced by Tsugami Corporation of Japan.[67] Cross & Trecker, which has closed and put up for sale its new and advanced machine tool manufacturing plant at Port Huron, Michigan, and its Fraser, Michigan, machining plant, is currently exploring the possibility of obtaining major components from Japan.[68]

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[63] Detroit Free Press, June 23, 1983, p. 8B.

[64] American Machinist, Jan. 1983, p. 43.

[65] Id.; American Metal Market, July 18, 1983, pp. 1, 18.

[66] American Machinist, Jan. 1983, p. 43.

[67] Japan Economic Institute, Japan Report, No. 162, Mar. 18, 1983, p. 4.

[68] American Metal Market, June 27, 1983, p. 14. Accord, Testimony of Richard T. Lindgren, President and Chief Executive Officer of Cross & Trecker Corp., June 28 ITC Hearings at 34, 39.

Nathaniel S. Howe, chairman of NMTBA and head of the machine tool operations of Litton Industries, Inc., stated, with respect to the developing trend toward American companies' shifting of production facilities to overseas sites, that:

> "[M]any of the . . . machine tool companies in this country have, in effect, developed what I call standby plans. They are waiting to see what's going to happen, We are not going to perish and if it becomes a requirement to go overseas to get the manufacturing done, that's very likely what's going to happen. But I would say basically that there are many companies who wish to remain here and continue their manufacturing here if conditions permit."[69]

If, however, the trend toward foreign sourcing continues, domestic machine tool manufacturing capacity will fall rapidly.

VI. THE REQUESTED RELIEF PROMISES SUBSTANTIAL BENEFITS AT A MODEST COST

The effect of the relief we request would be to focus the emphasis, in U.S. machine tool companies' strategic planning, on the substantial advantages of domestic production. The relief would also tend to shift the locus of production under joint ventures and license agreements with foreign companies from foreign to domestic locations.[70] This would preserve both U.S. machine tool users access to foreign technology and U.S. machine tool production capacity. In addition, the relief would induce overseas competitors who wish to enter the U.S. market to construct production facilities here, thereby adding to the U.S. machine tool building capacity.[71]

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[69] Id. at 39-40.

[70] Perhaps as a result of the possibility of trade relief, Okuma Machinery Works of Japan recently entered into an agreement with a U.S. machine tool builders, DeVlieg Machine Co., pursuant to which DeVlieg will build and market certain types of Okuma machine tools in the United States. American Metal Market, June 13, 1983, p. 1.

The primary result of the relief, however, would be to create the reasonable expectation of increased volumes of domestic production at first under the aegis of quotas and subsequently as a result of the accumulating strength of U.S. machine tool companies. The expected increase in production volume would indicate concomitant improvement in economies of scale. These expectations would stimulate investment in the automation of U.S. machine tool factories, R & D and marketing initiatives. The result would be a strengthened competitiveness in the world markets.

The primary short term contribution of the requested relief may well be the preservation of the U.S. machine tool industry from a major loss of capacity, rather than providing inducement for the acquisition of substantial capacity in addition to what existed in 1981. In the short term, the former result is perhaps more important to the national security than the latter, because the U.S. industry retains much of its enormous investment in plant, technology and skills accumulated over many years and remains by far the most broadly-based national machine tool industry in the Free World.

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[71] Earlier this year, Mazak Corporation, a subsidiary of a leading Japanese machine tool manufacturer, the Yamazaki Machinery Company, began assembly of largely imported parts at a highly automated production facility in Florence, Kentucky. Domestic manufacture of parts is scheduled to begin next year.

The relief would allow continued strong competition from foreign and domestic sources in all machine tool types. Thus it would cause relatively small and widely dispersed costs, which should be readily acceptable in light of the fact that national security is not cost free. These costs will not jeopardize the competitive position of other U.S. industries in international markets.

Notwithstanding the relief, there would remain a substantial foreign participation in the U.S. machine tool market,[72] and in nearly all product types, and especially in NC lathes and machining centers, in which the Japanese penetration has been greatest, there would exist strong competition among domestic competitors and from the very large inventories in the United States of Japanese machine tools that the Japanese have acknowledged to exist[73] and repossessed nearly new machine tools in the United States.[74] Additionally, U.S. producers are presently operating inefficiently at low capacity utilization rates. Their first priority will be to increase production and sales.

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[72] "[I]ndustry sources generally agree that foreign competition will continue to be a significant factor in the U.S. market, regardless of any government action." American Metal Market, June 13, 1983, p. 2A.

[73] The Japan Economic Institute of America, a registered agent of the Government of Japan, recently reported that "[b]y the end of 1982, . . . several thousand unsold Japanese machine tools were sitting in U.S. warehouses -- enough to supply American job shops and other small and medium users for up to one year." JEI Report No. 21A, June 3, 1983, p. 3.

[74] A representative example of an advertisement for such repossessed machine tools, taken from American Metal Market, August 22, 1983.

Moreover, five years -- the period of quotas requested -- is only long enough for the domestic industry to stabilize and revitalize itself, not long enough to retard foreign competition in the long run. U.S. producers will not jeopardize long-term relationships with customers by unreasonable price hikes in the short term. Overpricing during a period of quotas would merely create a devastating pent-up demand for imports at the end of the quota period.

In fact, the likely price effects from a grant of relief would be far below such a level. Immediately, the effect would probably be to eliminate some, but not all, of the deep list-price discounting and extraordinarily generous financing terms currently offered by the Japanese for many of their products. Thereafter, there would probably not be substantial increases in present prices. Senior officers of leading companies in the U.S. machine tool industry have stated that, for the reasons stated above, they do not believe that quotas would cause substantial price rises. Moreover, the machine tool industry is aware that the Government retains a basis for assuring that unreasonable price rises do not occur. After putting quotas in place with an Executive Order, the President could rescind or revise his order at any time upon a finding that price rises were harming the national security.

Moreover, the benefit that would be obtained from the relief, which is a domestic machine tool industry substantially stronger and more able to meet mobilization needs than it otherwise would be, would substantially exceed the cost. In estimating the cost of not granting the relief, it is relevant to consider the cost, which would be enormously greater than the cost of the five years of quotas' of either rebuilding a debilitated machine tool industry in time of crisis, or of increasing the defense of Japan and Western Europe to the extent that serious damage to their machine tool industries, transportation and other industrial infrastructure would not be a reasonable possibility during a long conventional war and of increasing our sea and air power to ensure the security of transoceanic shipping routes during such a war.

The relief is not intended to preserve, and will not preserve, inefficient U.S. companies with obsolete product lines. It will not retard any rationalization of the U.S. machine tool industry that may take place through mergers. It will not deny access by U.S. companies to any state-of-the-art machine tool technology. The relief is the most cost-effective way to strengthen the U.S. machine tool building industry as a major competitive force in world markets because the relief would preserve and build upon the industry's substantial residual strength.

But the opportunity to secure these advantages by granting the requested relief is fleeting. The opportunity exists because the Japanese incursion into the U.S. market has been sudden. Consequently, U.S. machine tool manufacturers retain much of the capacity that they have built up over the years. But the hemorrhage of that capacity has already begun, and it will accelerate if U.S. machine tool manufacturers, concluding that Japanese predominance in NC machine tools is inevitable, abandon domestic production in favor of foreign sourcing, primarily in Japan.

Without the import relief requested in NMTBA's petition, the U.S. industry may not be able to generate the capital needed to make U.S. machine tool production facilities competitive. If, however, such investment can be made, the chances are good that the U.S. industry will regain strength, achieve strong domestic production capability, and retain technological preeminence. If, on the other hand, in the exercise of sound business judgment, U.S. machine tool companies orient their businesses away from domestic production, domestic production capacity and technological stature will shrink dramatically. In those circumstances, the cost of resurrecting the industry would be enormously greater than the modest cost of the requested relief.

VII. THE U.S. MACHINE TOOL INDUSTRY HAS UNDERTAKEN SUBSTANTIAL INITIATIVES TO HELP ITSELF

Notwithstanding currently discouraging economic circumstances, the U.S. machine tool industry has mounted a vigorous campaign of self-help. As even JMTBA acknowledged earlier this year, the U.S. machine tool industry is "[l]earning its lesson from past downturns and from the stiff competition provided by foreign manufacturers."[75] The relief that NMTBA requests would complement the industry's self-help initiatives by giving those initiatives time to take hold and product results.

The description of U.S. machine tool companies' self-help such initiatives that follows draws upon annual reports of publicly traded machine tool companies, personal interviews with executives of certain of the larger machine tool manufacturers, testimony of machine tool executives before the International Trade Commission on June 28, 1983, and letters from executives of 26 machine tool companies that represent a cross-section of the U.S. industry and its approaches to self-help.

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[75] Comments of Japan Machine Tool Builders' Association to the International Trade Commission, Competitive Assessment of the U.S. Metalworking Machine Tool Industry (No. 332-149), p. 38 (Feb. 3, 1983).

The goal of the self-help initiatives is an industry that will be fully competitive in world markets. As representatives of the U.S. industry forthrightly acknowledged in the report of the Japanese study mission published in September 1981,[76] achievement of this goal requires that U.S. producers must lower unit production costs, increase quality and service and continue technological innovation by:

-- Development of programs to motivate, build trust and instill pride in the U.S. machine tool work force, seeking a more cooperative and less adversarial relationship between labor and management in order to achieve greater productivity.

-- Aggressive investment in innovative production technologies, including automated, unmanned, flexible manufacturing systems (FMSs) sacrificing, where necessary, near-term profit for long-term gain.

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[76] NMTBA Japanese Study Committee, "Report: Meeting the Japanese Challenge" (1981). The report followed a two-week on-site examination of the technologies, production methods and products of the Japanese industry by leaders of the U.S. industry. The purpose of this study mission was to understand the reasons for Japanese successes.

-- Sustained strong investment in research and development to devise new products that are durable, productive and efficient, and technologically advanced.

-- Emphasis on the quality of U.S. machine tools and responsiveness of U.S. builders to customer needs in the design, manufacture, application and servicing of American machine tools -- paying close attention to changing customer requirements.

-- Pursuit and cultivation of all feasible opportunities to market American machine tools worldwide.[77]

There is a consensus in the industry that these initiatives must be pursued as a matter of highest priority.

In addition to pursuing these goals, members of the American industry have made painful economic choices in face of the current recession, closing older plants and permanently reducing employment. Depending upon the amount of investment in modern production equipment that follows, these actions are the harbinger of either a highly productive and competitive domestic machine tool building industry, or one that is severely diminished.

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[77] Significantly, the report did not recommend import controls against foreign competition. However, in a comment appended to the Commission's Report, Nathaniel S. Howe, the Mission's Chairman, stated that if foreign competition were seriously to affect the health of the domestic tool building industry, it would then need to seek temporary help from the United States government on national security grounds. "Meeting the Japanese Challenge" a report prepared by the Japanese Study Mission of the NMTBA, p. 8 (Sept. 14, 1981).

A. Human Capital -- Labor Relations

Machine tool builders are trying to improve productivity through better motivation and training of employees. Some companies have instituted profit sharing programs and/or employee stock ownership plans to give their workers a direct stake in the companies' prospects. Other have emphasized improved training programs. Examples of such training programs include: (i) providing an opportunity for all workers to be trained in the use and programming of CNC equipment -- even if not required by their current jobs; (ii) increasing employee skill levels through use of "work centers," in which employees work together as a team, learning to operate all machines in the particular work center; (iii) reimbursing employees for the costs of any training or schooling completed outside the plant; and (iv) employing full time training managers to design and administer apprenticeship programs to allow upgrading of employee skills.

Many companies have instituted routine labor-management meetings. At such meetings, management briefs employees regarding capital spending plans, the financial condition of the company and the financial outlook. Candid discussions of this sort have been especially important during the current extreme recession. These meetings provide an opportunity for employees to discuss work-related problems and to question top management regarding a company's plans and prospects. An example is White-Sundstrand's policy that top management meet with all employees at least once a year to review the company's "Five Year Plan" and discuss in detail the company's strategy, market, product development and organizational plans, and resulting employment prospects.[78]

However, commitment to enlightened employee relations does not require, or even countenance, a supine posture in the face of unreasonable union demands, especially with respect to work rules that can seriously restrict the potential productivity of U.S. machine tool building companies. In some cases, unions have agreed to concessions to improve the competitiveness of U.S. machine tools.[79] In other cases, U.S. machine tool manufacturers, including White-Sundstrand and Brown & Sharpe, are enduring strikes instead of conceding on the critical issue of flexibility in the use of labor.

B. Capital Investment and Productivity

American machine tool builders realize the further modernization and automation of production facilities are required if they are to remain competitive. As the letters indicate, this realization is not belated; during the period 1976-1981, capital investment in the machine tool industry grew at twice the rate for all other manufacturing in the United States.[80] Although this rate of investment has been affected by the current deep recession in the industry, investment continues in the most sophisticated equipment such as flexible manufacturing systems and CAD/CAM.[81]

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[78] See testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, p. 4.

[79] Testimony of W. Paul Cooper before the International Trade Commission, June 28, 1983, Transcript of Proceedings, Competitive Assessment of the U.S. Metalworking Machine Tool Industry, (No. 332-149), June 28, 1983, p. 36.

[80] Testimony of Nathaniel S. Howe before the International Trade Commission, June 28, 1983, p. 4.

According to its 1982 annual report, Cincinnati Milacron has recently spent $26.7 million to modernize its facilities through installation of flexible manufacturing systems and CAD/CAM. The company has budgeted $12.5 million to continue this modernization during 1983.

According to its 1982 annual report, the Monarch Machine Tool Company has spent $4.0 million to add to its capacity in Sidney, Ohio, to build CNC vertical turning machines.[82] Another company is planning a $2.8 million technology center. According to Charles Ames, President and Chief Executive Office of Acme-Cleveland Corporation, speaking at a December 1982 machine tool forum sponsored by Paine Webber, that company is constructing two new plants as a part of a $6.4 million program to increase productivity.

Many companies continue to invest in new machines, albeit at a reduced rate, in order to improve productivity, to increase the quality of their products and to shorten delivery times. For instance, during the past five years, White-Sundstrand has consistently invested in new machinery and equipment at a rate of three to four times depreciation, and it intends to sustain or increase this rate of investment in productivity improvements.[83]

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[81] _Id_.

[82] Monarch 1982 Annual Report, p. 16

[83] Testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, p. 3

The Ingersoll Milling Machine Company recently received an award from the Society of Mechanical Engineers for its leading role in developing and installing computer-integrated manufacturing in its Rockford, Illinois plant.[84]

C. Research and Product Development

Given the rapid advances in technology that are affecting the industry and its customers, expenditures for research and development are the lifeblood of the machine tool business. To compete effectively in the domestic and export markets, the industry must retain the ability and the incentive to continue and increase its R&D expenditures. If the industry's sales and profits continue to decline, however, this will become impossible. The result will be a vicious circle in which declines in sales and profits will retard technological advances, causing further declines in sales and profits, with the cycle continuing until the industry has fallen irretrievably behind in foreign competitors. The risk that the domestic machine tool industry may thus be eclipsed by its foreign competition -- as other once-strong United States industries already have been -- has obvious importance for the national security.

Many companies have continued significant research and development expenditures, notwithstanding severe economic stringency.

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[84] Commline, the Journal of Computerized Manufacturing, May-June 1983, pp. 10-11. In addition, NMTBA has promoted, among its members, investment in and installation of manufacturing process improvements. For example, it recently sponsored a conference on "Manufacturing Management in Today's Economy" involving discussion of topics such as the use of flexible manufacturing systems, the potential of robotics for machine tool manufacturing, the rise of computer aided design and the costs and benefits of achieving better quality control.

According to Laura Conigliaro, machine tool analyst for Prudential-Bache Securities, "a number of manufacturers have increased their research and product development budgets, despite slack sales and revenues, in order to be prepared for a rebound."[85]

Cincinnati Milacron has just completed a $6.8 million research center at its Cincinnati headquarters.[86] Similarly, Ex-Cell-O Corporation has established a new technology center for machine tool research and development.[87] The Monarch Machine Tool Company is adding a new engineering development laboratory to its Sidney, Ohio facility,[88] and South Bend Lathe, Inc. has recently established an engineering group in its research division dedicated exclusively to product innovation.[89]

The results of commitments to R & D have been continued new product introductions during the recent and continuing machine tool recession. In addition, work is ongoing on product lines that will be introduced in the future. Cross & Trecker, for example, plans to introduce in 1984 a new generation of flexible manufacturing systems that will significantly advance the state-of-the-art.[90]

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[85] American Metal Market, June 13, 1983 at p. 9A (emphasis added).

[86] See Cincinnati Milacron 1981 Annual Report, p. 29.

[87] Ex-Cell-O 1982 Annual Report, p. 5.

[88] Monarch 1982 Annual Report, p. 21.

[89] Personal communication to Covington & Burling from J.R. Boulis, President of South Bend Lathe, Inc.

[90] Testimony of Richard T. Lindgren before the International Trade Commission, June 25, 1983, p. 3.

Notwithstanding allegations to the contrary, American machine tool producers are retaining a technological lead.[91] In the important growth field of flexible manufacturing systems (FMS), Americans' technological capabilities in machine tool manufacturing, component hardware and software and robotics, place American manufacturers in a good position for potential success. American computer numerically control (CNC) machine tools and technology are equal to or better than those made in Japan.[92]

D. Responsiveness to Customers

American machine tool builders have substantially increased their responsiveness to customers. Several companies have conducted extensive efforts to determine what innovations and adaptations will be needed to meet the needs of customers in the future. For example, Cross & Trecker Corporation has invested much of its engineering staff's time in learning the specifications of the machine tools and manufacturing systems that its customer industries anticipate requiring in the next decade and beyond.[93] Similar customer surveys allow companies with inventories to alter inventory levels on the basis of better market data.

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[91] Testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, pp. 7-8. See also Testimony of Richard T. Lindgren before the International Trade Commission on June 28, 1983, pp. 2-3.

[92] *Id.* at p. 6.

[93] Testimony of Richard T. Lindgren before the International Trade Commission, June 28, 1983, p. 3.

American companies have improved their delivery of spare parts to reduce the downtime of their machine tools on customer premises. Some companies have installed computer systems to handle spare parts orders and now can ship spare parts within 24 hours of client orders. Similarly, some companies have built diagnostic systems into their machine tools that permit immediate telephonic communication of the source of the malfunction from the machine to the companies' engineering staffs.

Many companies now run regular customer training schools on programming and maintenance of the machine tools that they produce. Cross & Trecker has developed detailed seminars for customers on the advantages of flexible manufacturing systems, and a team of Cross & Trecker representatives has given such seminars to customer companies.[94] In addition, many companies have established financial subsidiaries that enable their operating units to offer both installment and lease financing at highly competitive rates.[95]

Most companies have increased their efforts at quality control. Suppliers are held to stricter quality standards. The number of quality check during construction, and the comprehensiveness of checks during the testing of completed machines, have been increased. Some companies offer incentive to employees for meeting quality goals. Some have programs to follow the performance of a machine tools after it has been installed on a customer's premises.

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[94] *Id*. at 6.

[95] *Id*. at 7.

All companies recognize that lead times must be kept reasonably short, and much shorter than they became in 1980-81. To that end, some companies have begun to produce machine tools for inventory.

E. Aggressive Domestic Marketing

Increasingly, companies are making heavy commitments of their engineers' and other employees' time to explain the vast potential of modern machine tools, especially in FMS applications for each customer's specific needs. Because FMS requires a dramatically new approach to manufacturing operations, this is nothing less than a serious effort at proselytizing the companies that account for much of the United States' industrial base, in an effort to persuade them of the net benefit of investing in highly productive and flexible applications of modern machine tools. In the past year, the senior executives of a significant number of machine tool companies have undertaken this effort, in the hope that it will produce new orders at the end of the recession.

So that both their sales and service staffs will be closer to customers, some of the larger U.S. machine tool companies that do not sell through distributors are opening large regional centers in major metropolitan areas. Cincinnati Milacron, for example, will open its fifth regional sales and service center this year. White Consolidated Industries is building one in Southern California.

Some companies have developed "economy lines" to meet foreign competition.

F. Export Promotion

In light of the current levels of import penetration in American machine tool markets, expanding exports of American-manufactured machine tools is more important than ever. Moreover, the February 1983 report of the Machine Tool Panel of the National Academy of Engineering regarding the machine tool industry recommends strengthening export performance by the industry. A number of the attached communications from individual companies affirm the industry's recognition of the importance of export efforts. Some have recently employed foreign marketing experts and have exhibited at overseas machine tool shows. Others have signed on additional foreign distributors and have spent significant amounts to educate those distributors about the merits of their products. White-Sundstrand has testified that it is "forging ahead with plans to market FMS and CNC machine tools in the European Community by establishing sales and service centers in key market[s]."[96] Similarly, Cross & Trecker is carrying out "a systematic long-range program to strengthen [its] world sales presence."[97]

The NMTBA emphasizes assistance to its members in securing export market opportunities. It maintains an international trade department; conducts international market research; sponsors expositions on behalf of the industry at foreign machine tool shows; and brings large groups of foreign visitors to the International Machine Tool Show sponsored every two years by NMTBA. Three professional trade specialists employed by the Association spend all their time either traveling overseas to promote United States machine tool products, conducting workshops to train member companies how to deal with the complexities of international trade, or consulting informally with company representatives about foreign business opportunities.

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[96] Testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, p. 6.

[97] Testimony of Richard T. Lindgren before the International Trade Commission, June 28, 1983, p. 7.

NMTBA collaborates with the Department of Commerce in conducting export seminars to educate United States manufacturers on export opportunities and techniques. The Association recently sponsored a seminar for machine tool industry members regarding the Export Trading Company Act of 1983. In 1982, the Association sponsored the most expansive machine tool show ever held in Mexico and in March 1983, conducted the first formal exposition of American machine tools ever held in the Peoples' Republic of China.[98]

Notwithstanding the high priority accorded to export promotion by the Association and many of its members, there are serious impediments to increasing United States exports that are beyond the control of the industry. As summarized in the recent testimony of Mr. Lustgarten,[99] these impediments include the competitive disadvantage suffered by United States firms because of the strength of the U.S. dollar in relation to foreign currencies and the trend of foreign countries to close their markets to U.S.

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[98] The vigorous efforts of the NMTBA to assist its members in obtaining export sales are elaborated in the testimony of James A. Gray, President of the NMTBA, before the International Trade Commission on June 28, 1983, at pp. 3-5.

[99] Statement by Eli S. Lustgarten, July 26, 1983, p. 5.

builders through various nontariff policies. As reported by Mr. Lustgarten, "[n]ationalization and/or consolidation efforts are underway in France, Spain, U.K. and several other European countries effectively closing the markets to U.S. builders."[100]

Moreover, a major potential market, Eastern Europe and Russia, has been effectively closed to U.S. builders by stringent and sometimes capricious export control policies of the United States. Records of the Department of Commerce show that in 1982, the Soviet Union imported $960 million worth of machine tools.[101] Of this amount, only $1.3 million worth -- comprising 12 machines -- was supplied from the United States.

Thus, while the desirability of expanding U.S. exports of machine tools remains indisputable, this goal is increasingly difficult of accomplishment. Nevertheless, members of the U.S. industry will continue to strive for export sales wherever serious economic and political obstacles can be overcome.

G. Personnel and Facilities Retrenchment

A necessary and difficult part of the industry's efforts to help itself in the last two years has been retrenchment. In order to minimize losses in the current economic climate, many companies have been forced to reduce employment. For instance, Acme-Cleveland's employment has fallen from 6,300 at the end of 1980 to 2,500 at the end of April 1983.[102] As part of theirefforts to consolidate operations and to continue automation, Cross & Trecker has reduced employment from 4,600 to 2,600 and the company plans to operate in a less labor-intensive mode once the economy recovers.[103] Gleason Works has recently reduced its workforce from 4,800 to 3,900 and has lowered employee compensation.[104] Other companies, have frozen salaries, reduced fringe benefits, eliminated overtime and shortened work schedules.

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[100] Id. Specifically, Ingersoll Milling Machine Company has complained of exclusion of American machine tools from French markets.

[101] Department of Commerce, Export Report, Series EM-522 (1982).

Similarly, companies have been seeking to improve productivity by closing or attempting to dispose of marginal manufacturing facilities. White-Sundstrand is redeploying its assets away from low technology machine tools such as surface grinders and manual lathes, in order to modernize its facilities for the manufacture of CNC machine tools with FMS applications. Reducing the high fixed cost associated with single purpose machine tools by installing flexible automation is the company's number one priority.[105] Ex-Cell-O has closed or consolidated excess or marginal operations so that the identifiable assets of its industrial equipment segment declined from $258 million in 1980 to $158 million in 1982.[106]

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[102] Testimony of W. Paul Cooper before the International Trade Commission on June 28, 1983, p. 5.

[103] Testimony of Richard T. Lindgren before the International Trade Commission, June 28, 1983, p. 5.

[104] Gleason Works 1982 Annual Report.

[105] Testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, p. 5.

[106] Ex-Cell-O 1982 Annual Report at pp. 4, 14.

VIII. THE U.S. MACHINE TOOL INDUSTRY'S INITIATIVES TO HELP ITSELF ARE NECESSARY BUT NOT SUFFICIENT TO PRESERVE THE INDUSTRY'S STRENGTH

The self-help efforts already underway to reinvigorate the industry offer ample proof that machine tool builders have the will,drive and determination to undertake the steps necessary to restore the health of this critical industry. However, because of the depth of the current recession and the scope of recent import penetration, the industry vitally needs the temporary import relief requested in NMTBA's Section 232 petition. The quota relief requested by NMTBA would strengthen the support of shareholders and capital markets to allow the necessary sustained commitments of capital.[107]

Achievement and maintenance of a strong competitive status in world markets, which is the goal of the self-help initiatives described above, will not be easy. U.S. manufacturers begin with the handicaps of substantially greater overall labor costs, greater costs associated with occupational safety regulations and product liability insurance, high real and nominal domestic interest rates and depreciated foreign currencies that favor imports and discourage exports. Factory automation and more effective marketing nonetheless require substantial investment at the same time that investment in research and development efforts is being increased.

The core of the industry's self-help initiatives is the investment of money. Especially in the circumstance of the continuing recession of the machine tool industry, realizing results from these initiatives will take time and a high level of risk. Results will take time to the extent the industry finances its capital investments with retained earnings.[108]

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[107] See, e.g., Testimony of Michael W. Davis before the International Trade Commission, June 28, 1983, p. 9.

To counteract the unprecedented threat to its vitality from imports, however, the industry is ready to obtain or commit, to the extent of its ability, substantial resources from sources other than retained earnings for the needed investment, notwithstanding the high level of risk involved. The requested relief would significantly reduce the perceived risk of investment by providing assurance that the juggernaut of foreign imports will be slowed. The relief, combined with the industry's self-help efforts, will also give assurance to the engineers and other employees who are crucial to the U.S. industry's research and development and marketing strategies.

It is said by some that the problems of the American machine tool industry are the industry's own doing and that it would be counterproductive to grant the requested relief because such a grant would lead the U.S. industry to complacency and retrogression to old and failed ways. NMTBA emphatically rejects this contention. A grant of the requested relief is a necessary complement of the industry's self-help efforts that will made a very substantial and a very positive difference in the future strength of the U.S. machine tool building industry. The industry realizes that it will need to make the most of every day during the relief period to improve its competitiveness.

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[108] This is the industry's conventional approach in light of its severe cycles. To do otherwise would increase, in the amount of debt service, the level of sales that a firm must surpass to make a profit, with the result that the firm's financial position might become precarious when deep troughs in the business cycle occur.

Moreover, while the U.S. industry has readily acknowledged that it can improve itself by studying sophisticated contemporary management and production procedures, and with vigor and commitment it has begun to implement applicable changes, the previous absence of those procedures in the U.S. industry is clearly not the only, and is probably not the primary, reason for its current difficulties.

According to the recent study of the machine tool industry by the National Academy of Engineering, "the relatively slow growth in the American economy in recent years cannot be ignored as a major factor governing the condition of the U.S. machine tool industry."[109] Moreover, "Japan, West Germany, France, Italy and the United Kingdom all feature more extensive government participation in the support and direction of their machine tool industries,"[110] and many foreign machine tool industries enjoy "aggressive government support . . . to help [them] capture world markets."[111] "[P]roduct liability and safety regulations have a particularly severe impact upon the [U.S.] machine tool industry . . . ,"[112] including "dampen[ing] the adoption of new innovations within the machine tool industry and among its customers."[113] Moreover, "government export policy in general has not been particularly helpful in overcoming obstacles to trade."[114] To protect the national security, U.S. machine tool builders have been prohibited from participating in the very large markets for machine tools in communist countries at the same time that Western European and Japanese manufacturers have exported to those markets without significant restrictions. Recently, the relative strength of the U.S. dollar and stringent import controls in financially embarrassed nations such as Mexico have depressed exports, while high interest rates have contributed to the depression of domestic machine tool demand.

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[109] National Academy of Engineering, The Competitive Status of the U.S. Machine Tool Industry, p. 58 (1983).

[110] Id. at 27.

[111] Id. at 41.

[112] Id. at 45.

The Japanese Machine Tool Builders' Association has erroneously asserted that the U.S. machine tool industry obtains benefits not available to foreign machine tool builders from "subsidies" granted by the Department of Defense's Manufacturing Technology ("ManTech") Program. Unlike the lavish Japanese programs, which are directed at the development of commercial products for overseas market penetration, ManTech's funds have been taken from military procurement accounts and have been limited to generic research intended to improve methods of producing military weapons systems.

ManTech funds have not been used to assist the U.S. machine tool industry directly since the early 1950's, when approximately $3 million was invested in the development of numerical controls at MIT.[115] Of course, it is hoped that the development projects funded by ManTech will have commercial application, and to that end, it is the Government's policy to disseminate to all members of the public, including foreign machine tool builders, the results of unclassified ManTech projects. However, most ManTech projects involve highly specialized military applications. The advantages to the U.S. machine tool industry from the ManTech program and other military research and development is almost entirely indirect and remote.[116]

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[113] Id. at 71.

[114] Id. at 44.

Military-related procurement by the United States and its prime and subordinate contractors exists to meet national security needs, not to prop up the machine tool industry or any other industry. Moreover, the effect of peacetime military procurement on the U.S. machine tool industry is not great. Direct procurement of machine tools by the Department of Defense accounts for only approximately 5 percent of the business of the U.S. industry during peacetime; an additional, approximately 15 percent of the domestic peacetime consumption of machine tools is stimulated by defense contracts. Moreover defense contractors are completely free to use foreign-made machine tools in their plants, and in many cases they do so.[117] Therefore, even if the meaning of "subsidy" were distorted to the point of including U.S. military procurement, such a "subsidy" is equally available to foreign machine tool builders.

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[115] Indeed, ManTech contracts are issued almost exclusively to prime defense contractors. Machine tool builders rarely have that status.

[116] The Navy recently committed $425,000 for a three year program primarily to improve robot precision, and some of the money will apparently be spent on a project to improve machine tool precision. American Metal Market, June 20, 1983. This investment, however, is minimal in comparison with the Japanese commitment.

The extraordinarily high level of U.S. demand for machine tools in the late 1970's and the resulting large backlogs of U.S. producers, which gave the Japanese a substantial boost in the U.S. market, arose from the effects of oil supply disruptions and the consequent U.S. policies regarding, among other things, automobile and airplane design and domestic oil production.[118] Because these effects were impossible to predict, the U.S. industry cannot be seriously faulted for its inability, in spite of substantial capacity expansions,[119] to meet all of that demand.

There is no doubt that the companies in the U.S. machine tool industry will face strong and healthy competition during the relief period if the relief is granted. In the present circumstances of the industry, unrestricted competition from imports during this period would debilitate, not rejuvenate, the industry. As Professor Paul W. McCracken of the University of Michigan and formerly chairman of the Council of Economic Advisers under President Nixon remarked:

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[117] The Buy-America Act, 41 U.S.C. §§ 10a-10d, applies only to direct procurement by the United States and its agencies.

[118] See Testimony of W. Paul Cooper before the International Trade Commission, June 28, 1983, pp. 6-7.

[119] "In the face of rapidly increasing demand, machine tool builders increased capital spending by 57 percent in 1979." Id. at 49.

> "[T]here *is* national security dimension to trade policy. Most of us are programmed to be suspicious of the national security argument. It's often an early argument for protection invoked by domestic industries under pressure from foreign competition. ... *If Japanese competitive pressure forces [American industries] to be more aggressive, productive, innovative and quality-conscious, the U.S. civilian and national security needs are both well served. If foreign competition, however, goes beyond this, how far is it prudent for national security reasons to see these industries reduced?* ... This is an uncertain and insecure world: national security is indeed a legitimate issue."[120]

A grant of the requested relief would not violate any agreement with our friends or allies.[121] Nor should the relief offend them. The relief is supportive of the rejuvenation of the U.S. machine tool industry, and the health of the U.S. machine tool building industry is critical to the mobilization potential and thus to the national security of the United States and the ability of the West to deter a large conventional war by conventional means. Therefore, while parochial interests within our friends and allies may be disappointed by the grant of the requested relief, our friends and allies will not have cause for questioning the legitimacy of the relief or of the good faith with which it was implemented.

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[120] *The Wall Street Journal*, June 25, 1982, p. 18 (emphasis in original in part and supplied in part).

[121] JMTBA, MTIAA and several European commenters make general suggestions that the Memoranda of Understanding between the U.S. Secretary of Defense and various Western European defense ministers (but not Japan's defense minister) may somehow be violated by the imposition of quotas. There is no merit in this suggestion. These memoranda concern reciprocal openness of the United States and various Western European nations, as governments, when procuring military items, to suppliers from the other signatory nation. They do not limit in any way the signatories' power to grant trade relief, especially on the grounds of national security.

Even if the relief we request were to engender some resentment on the part of our friends and allies, it is unlikely seriously to affect our friendship or to harm our alliances. Allies and friends routinely tolerate self-interested actions of their colleagues as long as an arguably reasonable basis in law and in fact exists for such actions. For example, Japan's defense, on the basis of national security, of its policy of protecting certain domestic agricultural products such as citrus products on the ground that the Japanese might otherwise starve in a time of crisis appears peculiar, if not disingenuous, to many of Japan's friends, but it does not disturb their friendship. Indeed, the United States, a major rice exporter, has sympathetically tolerated Japan's barriers to rice imports even though they are contrary to the United States' economic interests and are clearly indefensible if, as JMTBA now so energetically contends, shipping disruptions would be slight in time of war. Similarly, the fact that "Japan . . . is doing considerably less than its fair share,"[122] according to the Department of Defense, in contributing to the military defense of the West has not harmed the friendship between NATO nations and Japan, even though "[t]he growing threat to Western interests . . . requires an increased defense effort by both the U.S. and its allies," and "[i]n order to maintain adequate public and governmental support for this increased war effort, equitable burdensharing [among the U.S. and its allies] is a _sine qua non_."[123]

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[122] U.S. Department of Defense, Report to the U.S. Congress on Allied Contributions to the Common Defense, p. 2 (1983).

Of course peace with Japan, Germany and the rest of the countries of Western Europe, which assert that their staunch and reliable friendship with the United States would continue through any world conflict, is not the issue. Instead, the broad issue is the West's defense against, and the deterrence of, attack by an increasingly formidable and demonstrably expansionist Soviet Bloc -- with which this nation pursues a policy of extremely restricted trade. The specific issue is whether the West can afford the displacement of machine tool production capacity from the relatively secure United States to Japan, which has no serious self-defense capability, or Western Europe, whose machine tool factories and transportation facilities may be isolated as a result of NATO's forward defense of a Western European invasion by the Warsaw Pact.

The National Security Clause is consistent with this nation's faith since World War II that the world's prosperity, and thus world peace, are likely to be strengthened by promoting nations' different comparative advantages through free international trade. Far from being an anomaly, the National Security Clause recognizes the limitations that have always attached to that faith. War can destroy international trade and the prosperity it may bring; and, in maintaining the requisite national capacity to deter war, a nation's primary objective is security and defense, not prosperity. If the United States did not face the threat of war, there would not be justification for the Clause, and if the United States and its allies were not threatened by the massively armed Soviet Union, this Petition would not have a basis.

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[123] _Id_. at 1.

But the threat of war between the Soviet Union and the industrialized democracies exists, and the National Security Clause requires the Government to follow an international trade policy that meets and deters this threat prudently.

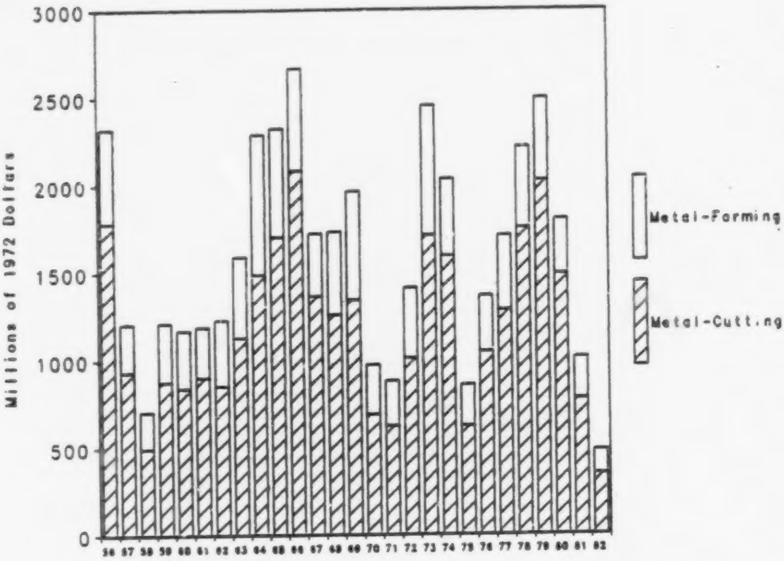
IX. CONCLUSION

The plight of basic industries in America has sparked a dialogue concerning the need for a U.S. "industrial policy." In this regard, considerable attention has been focused on industrial "winners" and "losers" -- one theory being that government policies which encourage the stabilization (and in some cases, expansion) of industries no longer enjoying a competitive advantage foster an imprudent allocation of resources. Proponents of this theory appear ready to write off many of our basic industries as a "lost cause."

NMTBA views this line of thinking as counterproductive and indeed, dangerous. Basic industries employ millions of American workers. The presence of industries such as ours provide strength and balance to the U.S. economy; their absence or weakness would lead to a seriously imbalanced economy that would severely limit the chances for sustained economic recovery and growth. Most importantly, basic industries such as the machine tool industry play a strategic role in determining this country's ability to respond in the event of a national emergency. Thus, when we talk about the "survival" of this industry, nothing less than our national security is at stake.

Some have argued that critical goods and materials needed in a time of war can be stockpiled. But production capacity, know-how and readiness cannot be stockpiled. Sophisticated production processes, and sophisticated weapon systems, require a domestic machine tool industry that is at least equal to the world's best. As imports continue to rise, the U.S. machine tool industry -- long the world leader -- is in danger of losing its technological advantage as well as its production capacity. NMTBA submits, therefore, that under Section 232, action must be taken to adjust the level of imports so that the U. S. machine tool industry can regain its competitive edge, thereby reducing the current threat to our national security.

FIGURE 1



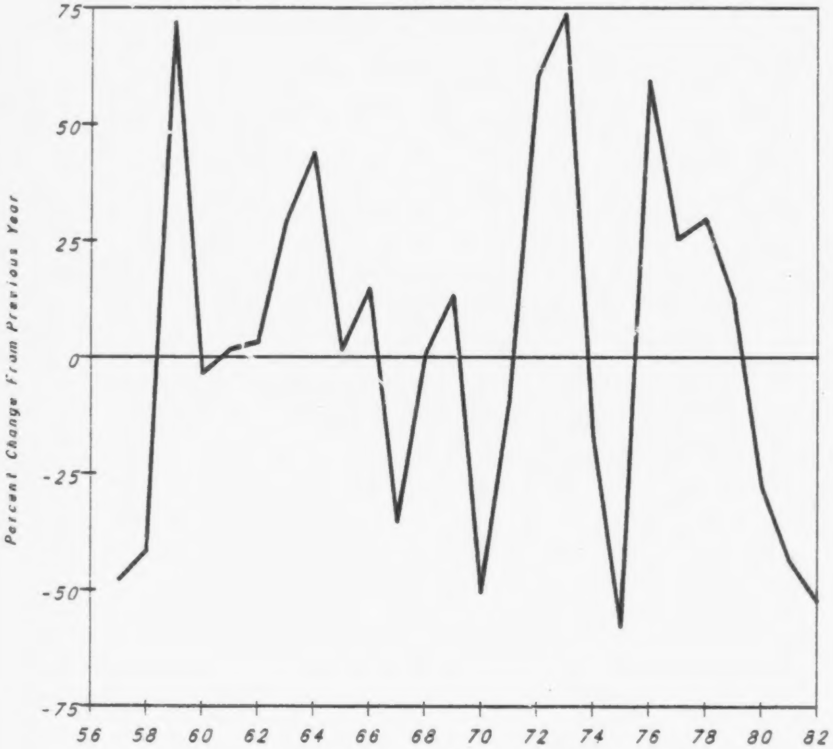
Net New Orders for Machine Tools
Received by U. S. Builders
(1972 Dollars)
1956-82

Source: NMTBA 'Economic Handbook of the Machine Tool Industry, 1982-83' and NMTBA 'Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog' (monthly).

Adjusted using Bureau of Labor Statistics (BLS), U. S. Department of Labor, Producer Price Index for respective sector, re-based to 1972=1.00.

FIGURE 2

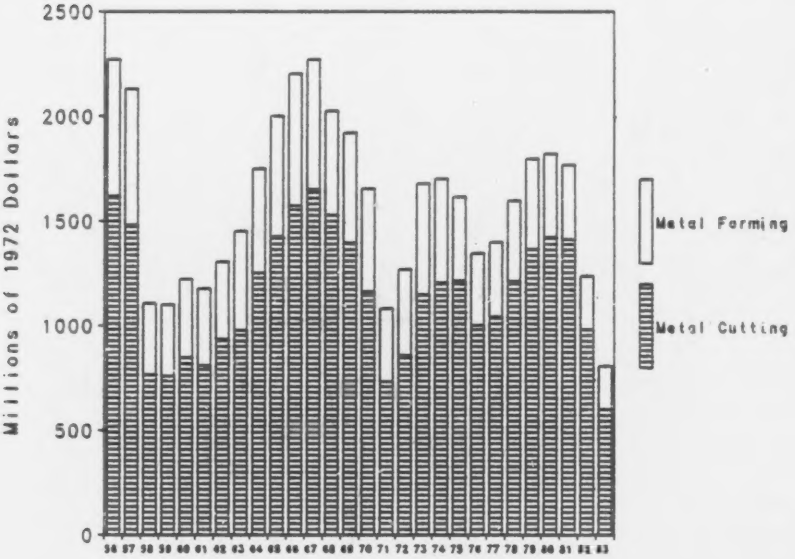
Year-to-Year Change in
Real Net New Orders of Machine Tools
1957-1982



Source: NMTBA 'Economic Handbook of the Machine Tool Industry, 1982-83' and NMTBA 'Industry Estimate of New Orders, Cancellations, Shipments and Backlog' (monthly).

FIGURE 3

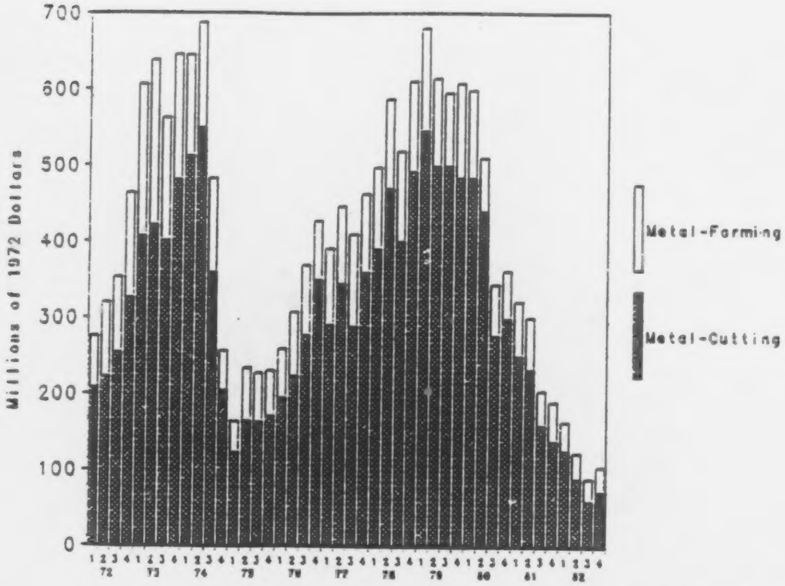
Shipments of Machine Tools
by U. S. Builders
(1972 Dollars)
1956-83 (a,b)



Source: U. S. Department of Commerce, 'Current Industrial Reports, Series MQ-35W, Metalworking Machinery.' Adjusted using BLS Producer Price Index for respective sector, re-based to 1972=1.00

(a) 1982 estimated using 3rd quarter figures for 4th quarter.
(b) 1983 forecast based on '1983 U. S. Industrial Outlook', U. S. Department of Commerce (1983).

FIGURE 4



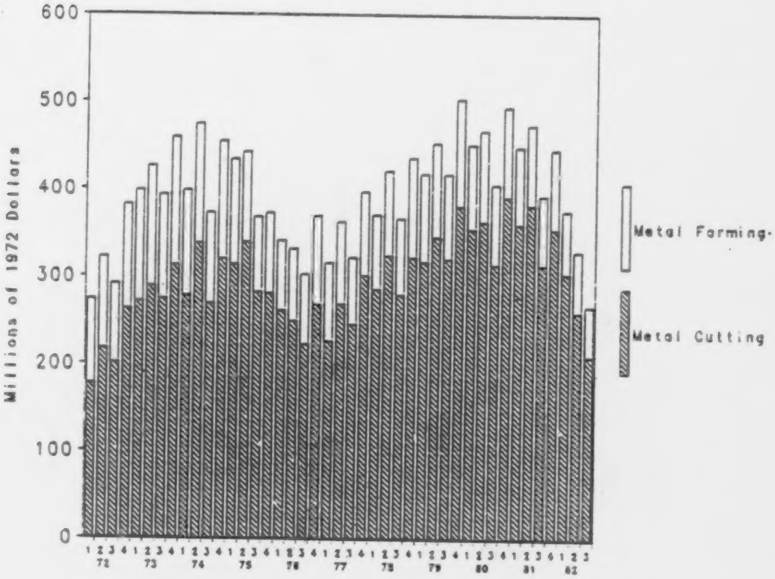
Net New Orders for Machine Tools
Received by U. S. Builders
(1972 Dollars)
Quarterly, 1972-82

Source: NMTBA 'Economic Handbook of the Machine Tool Industry, 1982-83' and NMTBA 'Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog' (monthly).

Adjusted using BLS Producer Price Index for respective sector, re-based to 1972=1.00.

FIGURE 5

Shipments of Machine Tools
by U. S. Builders
(1972 Dollars)
Quarterly, 1972-82

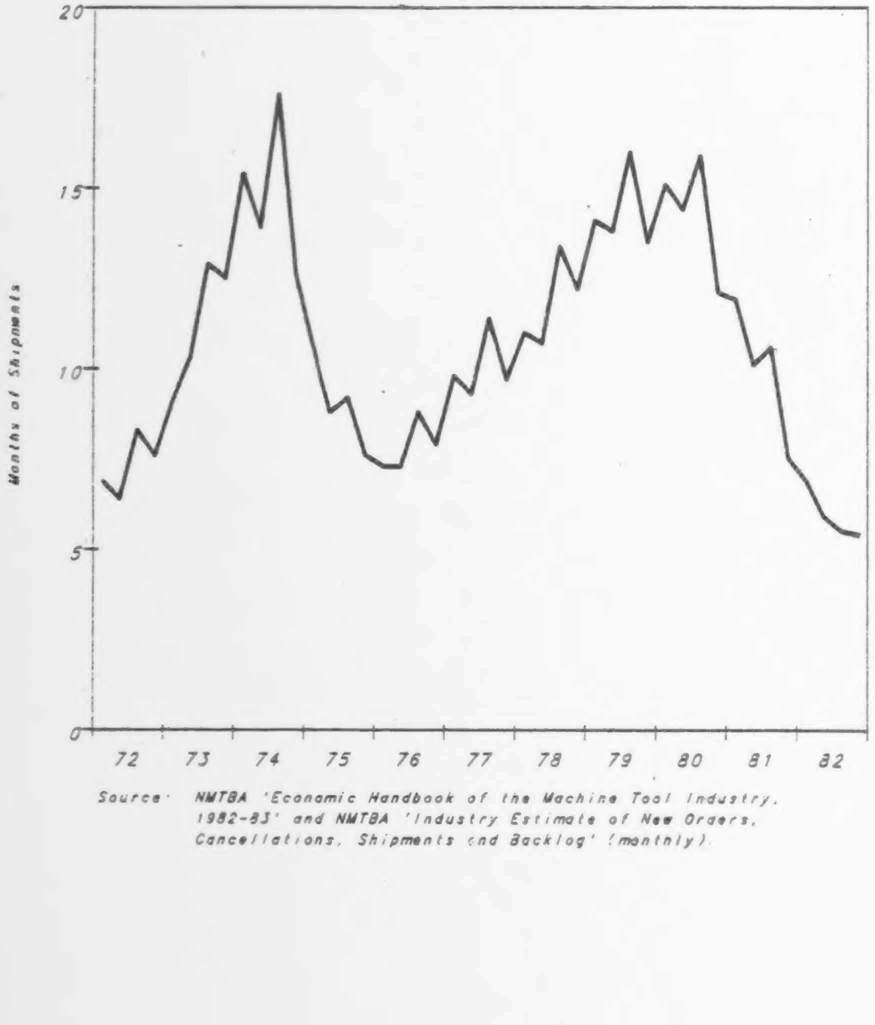


Source: U. S. Department of Commerce, 'Current Industrial Reports, Series MQ-35W, Metalworking Machinery' (quarterly and annual summaries).

Adjusted using BLS Producer Price Index for respective sector, re-based to 1972=1.00.

FIGURE 6

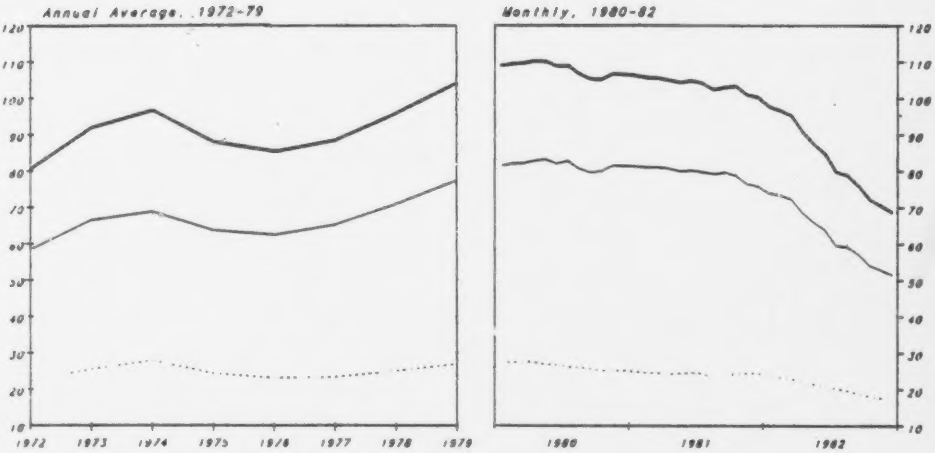
Backlog of Unfilled Orders
for U. S. Machine Tools
(in months of shipments)
Quarterly, 1972-82



Source: NMTBA 'Economic Handbook of the Machine Tool Industry, 1982-83' and NMTBA 'Industry Estimate of New Orders, Cancellations, Shipments and Backlog' (monthly).

FIGURE 7

Total Employment in the
Machine Tool Industry
(Thousands of Persons)
1972-82

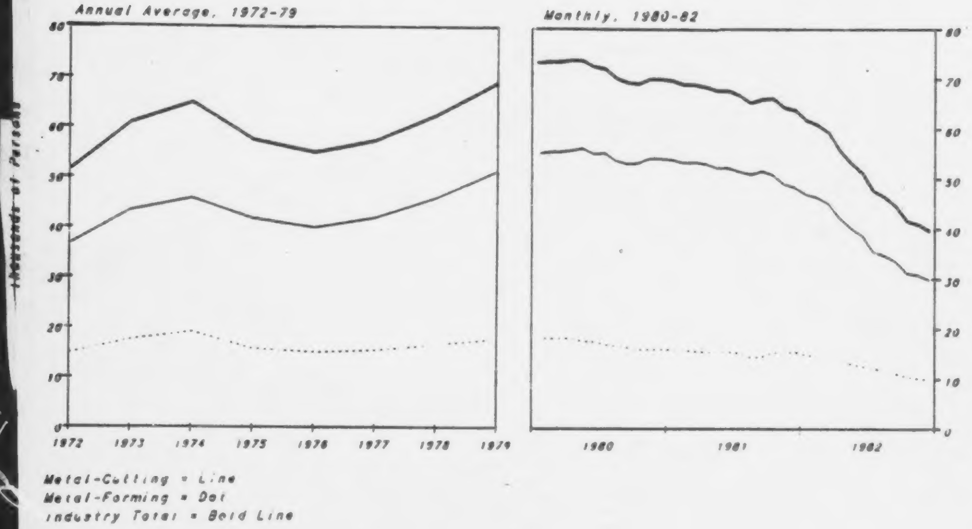


Metal-Cutting = Line
Metal-Forming = Dot
Industry Total = Bold Line

Source: U. S. Department of Labor, Bureau of Labor Statistics, 'Employment and Earnings' (monthly).

FIGURE 8

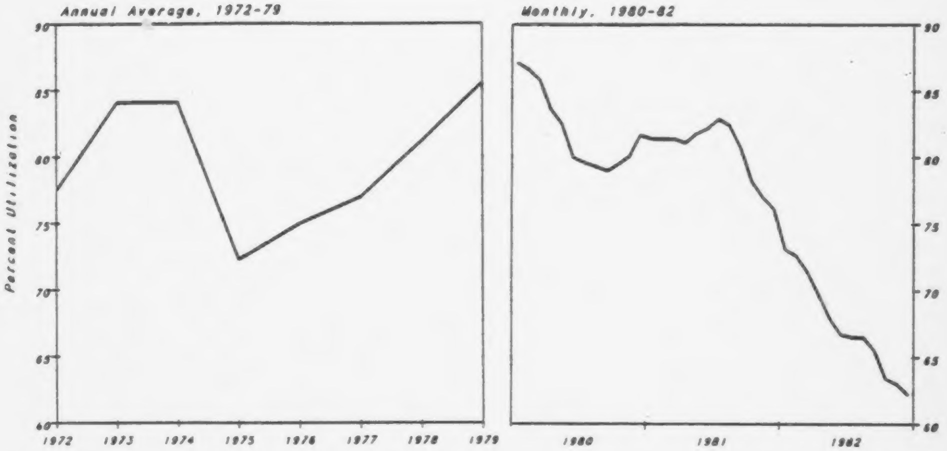
Employment of Production Workers in the Machine Tool Industry (Thousands of Persons) 1972-82



Source: U. S. Department of Labor, Bureau of Labor Statistics, 'Employment and Earnings' (monthly).

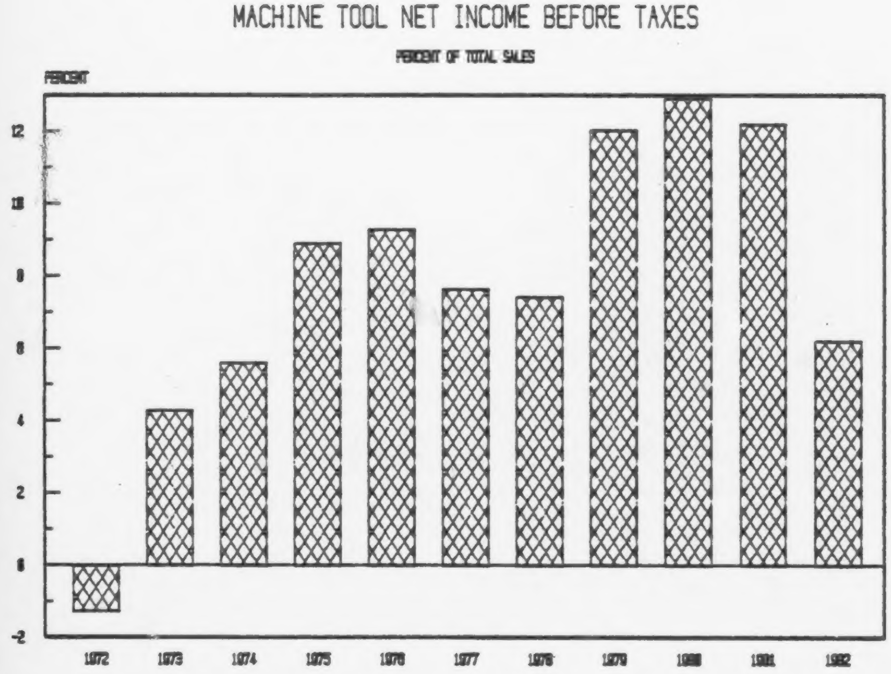
FIGURE 9

Capacity Utilization
in the Nonelectrical Machinery Industry
1972-82



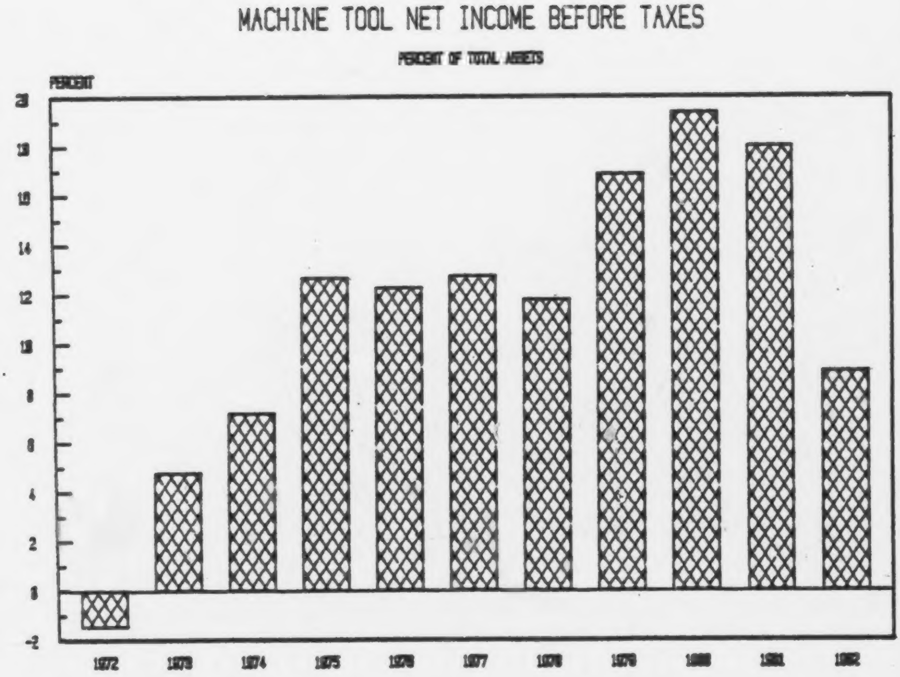
Source: McGraw-Hill Publications Company, Department of Economics, 'McGraw-Hill Operating Rates Report' (monthly)

FIGURE 10



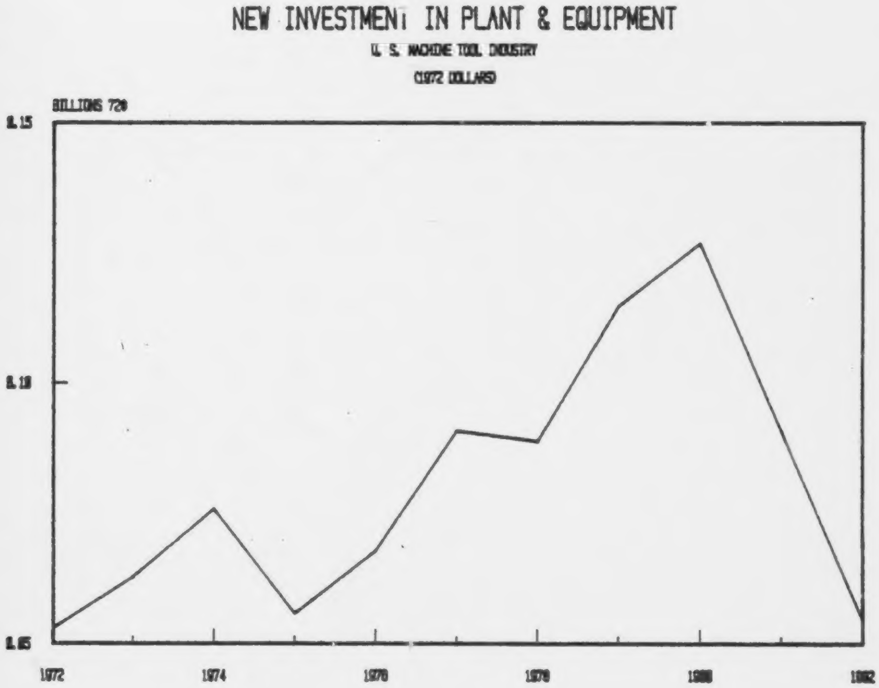
SOURCE: NMTBA "Economic Handbook of the Machine Tool Industry 1982-83," p. 255; 1982 projection by Data Resources, Inc. (1983).

FIGURE 11



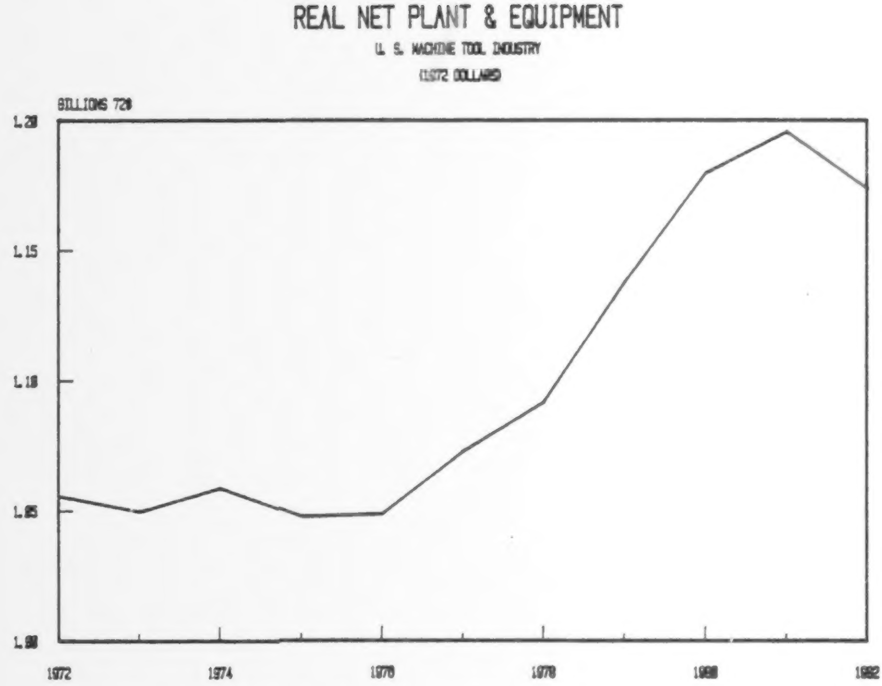
SOURCE: NMTBA "Economic Handbook of the Machine Tool Industry 1982-83," p. 255; 1982 projection by Data Resources, Inc. (1983).

FIGURE 12



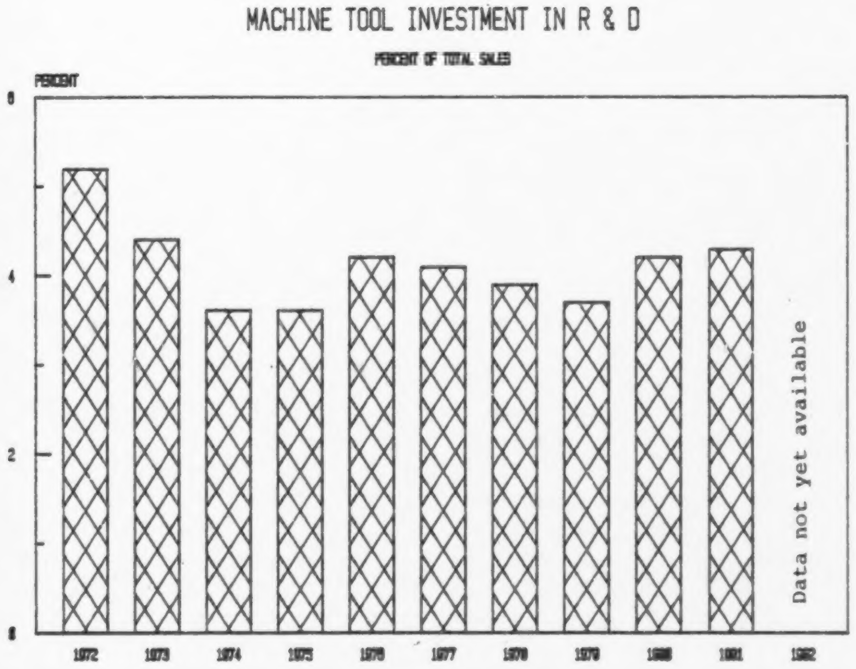
SOURCE: Data Resources, Inc. (1983).

FIGURE 13



SOURCE: Data Resources, Inc. (1983).

FIGURE 14



SOURCE: National Machine Tool Builders' Association, "Confidential Financial & Operating Ratio Report."

Senator Heinz. Thank you very much, Mr. Currie.

I am not going to have as much time as I want to ask you questions, but I do have a couple I think we can squeeze in.

Let me start with Mr. Currie on the machine tool industry.

You indicate in your testimony, and we will put the entire testimony in the record, that the initiatives that the industry is taking are not enough. You are seeking relief under 201. Do you believe that there are any additional steps that the Congress should take to try to address what has been characterized as a decline in industrial competitiveness in the United States?

Mr. Currie. Well, I feel personally that that probably is not necessary. If we were to get the relief under the 232 petition, combining that with the other efforts that we are conducting as an industry, we should be able to restabilize our financial and our productive capabilities as well as our engineering know-how, and within the period prescribed under the petition we should be fully competitive worldwide.

Senator Heinz. One of the arguments made against granting either 232's or 201's—232's being the national security equivalent of 201's, giving additional cause for issuance—is that an industry or its workers may simply take the benefits of that protection and run, stash it in their bank accounts, unless the stockholders obtain fatter labor agreements. What do you say to that?

Mr. Currie. Well, I think the industry, as other basic industries in this country have long-since learned the lesson that you just don't grab the money and run. If you have any plans at all to continue in existence in future years, you are simply going to reinvest in your business. You are going to pay attention to all of the elements of operating a business and take the long view rather than the short view, which may have characterized some industries in the past.

Senator Heinz. Have you had a chance to study 849, the Industrial Revitalization Act? And, if so, do you have any comment or reaction to it?

Mr. Currie. No, but I would defer to counsel, Jim Mack.

Senator Currie. We get to see him on all kinds of data. [Laughter.]

Senator Heinz. Jim, I don't want to stifle this discussion at this point, but——

Mr. Mack. We will submit something for the record.

Senator Heinz. Would you? I would appreciate that.

[The information follows:]

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TWX 710-831-0031 NMTBA MCLN

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DIRECTORS:
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President
Erie Press Systems
An EFCO Company
Erie, Pennsylvania

Charles E. Gilbert, Jr.
President
The Cincinnati Gilbert Machine
Tool Company
Cincinnati, Ohio

Albert W. Moore
President
Gleason Machine Division
Gleason Works
Rochester, New York

Phillip A. O'Reilly
President & C.E.O.
Houdaille Industries, Inc.
Fort Lauderdale, Florida

William [illegible], Jr.
President
Rousselle Corporation
Subsidiary of Alco Standard Corporation
Chicago, Illinois

EX-OFFICIO:
William C. Gallmeyer
President
Gallmeyer & Livingston Company
Grand Rapids, Michigan

Nathaniel S. Howe
Senior Vice President
Litton Industries, Inc.
Group Executive
Machine Tool Systems Group
Hartford, Connecticut

STAFF:
James A. Gray
President

Elwood H. [illegible]
Exhibition Director

Mark J. [illegible]
Administrative Director

William Atkinson, Jr.
Safety Director

James H. Mack
Public Affairs Director

[illegible]
International Trade Director

John [illegible]
Training Director

Charles Pollock
Public Relations Director

John B. [illegible]
Technical Director

Anthony M. Bratkovich
Engineering Director

Joe T. Franklin, Jr.
Statistical Director

[illegible]
Controller

Overlooking
The Nation's Capital

October 28, 1983

Mr. Edgar R. Danielson
Senate Committee on Finance
231 Senate Hart Office Building
Washington, D.C. 20510

Dear Mr. Danielson:

On October 3, 1983, the National Machine Tool Builders' Association (represented by James A. Currie Sr., President, Erie Press Systems) appeared before the Senate Finance Subcommittee on Economic Growth, Employment and Revenue Sharing. Please find enclosed NMTBA's response to the question posed by Senator Heinz concerning S. 849, the Industrial Revitalization Act (see page 81 of enclosed transcript).

Should you require any further information, please let me know.

Sincerely,

Jim Mack

James H. Mack
Public Affairs Director

JHM:pkk/1744F
Enclosures

Senator Heinz: Have you had a chance to study S. 849, the Industrial Revitalization Act? Any, if so, do you have any comment or reaction to it?

NMTBA concurs with Senator Heinz' assessment that a meaningful alternative to the import relief process currently available under Section 201 of the Trade Act of 1974 is both necessary and desirable. Indeed, some have described application for import relief under 201 as "burial insurance" -- the implication being that an industry must literally be at the brink of collapse in order to satisfy the statutory criteria for relief.

S. 849, the Industrial Revitalization Act, provides such an alternative. Senator Heinz' proposal would establish an import relief vehicle under 201 specifically designed for industries which are making good-faith attempts to stabilize and restore competitiveness. We join Senator Heinz in recognizing that self-help initiatives are an important part of any industry's comprehensive adjustment plan. As noted in our comments to the Subcommittee, the U.S. machine tool industry has undertaken and continues to pursue a number of self-help initiatives, with a view towards restoring its competitive edge. (These initiatives are detailed in our written submission; see pp. 45-59). NMTBA is confident that, by any standards, the industry's efforts in this regard ensure that it would qualify for the "fast track" import relief alternative outlined in S. 849.

Senator HEINZ. Mr. Nagi, you have taken the position that the printing industry has been going through a technological revolution for at least the last decade, that while there are some problems that it is coping, that you want to let the wind of competition blow both hot and cold through your industry, and that with a few minor exceptions involving job training, retraining, and taxation, all is well. Is that right?

Mr. NAGI. Well, I wouldn't say "all is well," but it hasn't changed significantly over the past 10 years. The technology that is occurring is rapidly advancing in our industry, more so now than ever before. But the industry is made up of mostly entrepreneurs, mostly of small businessmen, and they are used to riding the crest of economic goodness and the trough of economic defeat.

Senator HEINZ. You mentioned one of the problems the industry has is when change is introduced and makes obsolescent a particular kind of operation and, more importantly, workers who may have held those jobs for extended periods of time and who are at a loss for a new way to continue earning a living. Are there any initiatives on worker training or retraining beyond those you hear discussed here that we should consider?

Mr. NAGI. I am not sure whether it is discussed here but it is one of our vital concerns. We haven't lost many people out of the industry because of technology. But that still forces us to train them for the new technologies, for the computer technologies which are invading all the industries including our own. So, therefore, the Printing Industries of America and the National Association of Printers and Lithographers are quite concerned about how do we: First, develop the programs; and second, how do we fund the programs? And how do we get people reoriented not only by training programs but also by motivation programs to a new set of rules on how they do their jobs?

Senator HEINZ. We would appreciate any suggestions in that area, together with any expansion you would care to make, also for the record, on the tax problems that the Federal Government may have.

Mr. NAGI. We would be happy to submit those.

[The information follows:]

PRINTING INDUSTRIES OF AMERICA, INC.,
GOVERNMENT AFFAIRS DEPARTMENT,
Arlington, Va., December 20, 1983.

Senator JOHN HEINZ,
Chairman, Subcommittee on Economic Growth, Employment, and Revenue Sharing, U.S. Senate, Washington, D.C.

DEAR SENATOR HEINZ: On behalf of the Printing Industries of America, I wanted to add some additional comments to the testimony presented by Mr. Terry Nagi on October 3, 1983.

The issue of job training is of critical concern to the printing industry. Because of rapid technological change in recent years, the industry requires a variety of skills that were not required just a few short years ago. Therefore, an increasing number of PIA's local and regional associations are developing apprenticeship training programs in an effort to meet the growing demand for skilled labor. PIA supported the recent passage of the Job Training Partnership Act and is working with local private industry councils in several areas of the country to establish printing industry training programs. PIA is also examining other approaches to the job training issue such as legislation (S. 1800) that would allow employees to establish individual training accounts to be used, if necessary, for retraining, relocation and job searches. Another measure (S. 1801) would allow businesses to take a 25 percent tax credit against employee training expenditures. This would place business spending on labor training on the same tax basis as outlays for plant and equipment, thus recognizing the need to upgrade the quality of the American labor force.

PIA has concerns in the tax area that merit a brief mention. Since the printing industry is made up predominantly of small businesses we are concerned about any changes in the estate tax structure. PIA supported the 1981 changes in estate taxes that were to be phased in over a several year period. We strongly oppose efforts that are underway to freeze the future reductions in estate taxes that are due to take effect through 1986. We hope such a measure would not be a part of any tax bill considered by Congress.

PIA is also concerned about efforts to greatly restrict the use of industrial development bonds by state and local authorities. Printers across the country have made substantial use of IDBs to finance the construction and expansion of facilities and to add new equipment. Many local economies have been enhanced by the use of IDBs and we hope that use would continue.

As Mr. Nagi discussed in our testimony, the printing industry is essentially healthy and is poised for significant growth as the economy continues to recover. We hope this committee will do all it can to encourage that recovery and avoid legislative efforts that hinder that effort.

Sincerely yours,

BENJAMIN Y. COOPER,
Senior Vice President, Government Affairs.

Senator HEINZ. Gentlemen, I apologize that we have run out of time. It was my intention to be able to go to 12 noon, but I cannot do so today.

Thank you all for being here; particularly I am grateful to Mr. Currie for having come down from Erie. It is probably warmer here than in Erie, but at least there are some additional benefits to your being here. Thank you very much.

Mr. CURRIE. Thank you.

Mr. NAGI. Thank you.

[Whereupon, at 11:33 a.m., the hearing was concluded.]

[By direction of the chairman the following communications were made a part of the hearing record:]

STATEMENT OF
INTERNATIONAL UNION, UNITED AUTOMOBILE, AEROSPACE, AND AGRICULTURAL IMPLEMENT WORKERS OF AMERICA, UAW

on the

FUTURE OF U.S. BASIC INDUSTRIES

before the

SUBCOMMITTEE ON
ECONOMIC GROWTH, EMPLOYMENT AND REVENUE SHARING
U.S. SENATE COMMITTEE ON FINANCE

July 25, 1983

The UAW is pleased to have this opportunity to offer its views on the future of U.S. basic industries and of their workers. The bulk of our Union's 1.1 million members work in the motor vehicle, farm implement, construction equipment, and aerospace industries. Because of their size, economic importance, and linkages to other industries, the way the nation guides — or fails to guide — the restructuring of these and other basic industries will have significant implications for the entire economy and for the future of our country.

Buffeted by high interest rates, an overvalued dollar, skyrocketing imports and worldwide recession, the economic crisis has been especially hard on our nation's industrial base. Between mid-1979 and the end of 1982, our manufacturing industries sustained a loss of some three million jobs, a catastrophic loss of more than one job in seven. The impact on basic industries such as auto, steel, and machine tools was especially devastating. Some of these jobs will come back if the economy continues to recover, but many other jobs are permanently gone. Only decisive action by government can halt and reverse this disastrous decline, and meet the needs of the countless thousands of workers who will never be recalled to their old jobs.

In 1978, the U.S. auto industry alone (Standard Industrial Classification 371) employed 1,005,000 workers, including 760,000 hourly employees. According to the Bureau of Labor Statistics, each of those core auto jobs supported 2.36 supplier jobs, broadly defined to include not only component parts workers, but also the steelworkers, rubber workers, aluminum workers, glass workers and other supplier jobs dependent on the auto industry. Taken together, then, the auto industry and its suppliers provided jobs to nearly 3.4 million Americans less than five years ago. Even this enormous figure excludes auto's macroeconomic jobs impact — the service sector, government and other employment generated when auto workers spend their pay checks.

In 1982, the core industry was down 32% from 1978 to just 685,000 workers. The Original Equipment Manufacturers (OEMs) plus supplier total was down to 2.3 million, nearly 1.1 million less than in 1978. And in 1983, despite the welcome news that all of the Big Three auto companies have moved strongly back into profitability, it looks as if auto employment will rise only modestly from 1982 to perhaps 750,000 workers. Adding in associated supplier jobs, the OEM plus supplier total would be just 2.5 million, fully 900,000 below 1978 levels and only one-fifth of the way back up from the 1982 trough. This means that hundreds of thousands of workers still on indefinite layoff more than four years after the crisis began will not soon be called back.

The causes of this battering include an energy crisis, a flood of imports, sky-high interest rates resulting from tight money and finally, double-barreled recession. The increase in import share has been especially dramatic. From 12.1 percent of the auto market in 1978, Japanese penetration skyrocketed to 21.8 percent in 1981 and continued to increase to 22.6 percent in 1982.

Despite voluntary export restraints, the Japanese share of our auto market during the second year of restraints (twelve months ended March 31, 1983) actually increased to 22.7 percent, up from 22 percent for the first year of restraint and 21.4 percent for the twelve months before that. As recently as 1975, Japan's share of our car market was only 9 percent; it was virtually nil a decade before that.

Those who have lost jobs in the auto sector have not fared well. A recent Cornell University study of workers displaced by the closing of Ford's Mahwah, New

Jersey plant found that 20 months after the closing only one-third had found new jobs. Moreover, nearly half of those found only part-time work. Replacement jobs offered fewer (if any) health and pension benefits, and two-thirds of the displaced were suffering from health or emotional problems not troubling them before the shutdown.

The sudden sharp declines in income experienced by the families of those finding new jobs points to yet another serious cost of letting basic industries shrink too rapidly: we are going from an economy with many middle-skill and middle-wage jobs to one with a few high-skill, high-wage jobs at the top and many low-paying ones at the bottom. This ominous development has serious implications for purchasing power, family stability, the distribution of income and wealth, social mobility and economic opportunity. It will mean fewer good jobs for young people entering the labor market at a time when youth unemployment rates are already shockingly high. For hundreds of thousands of their parents, including many who are among the high proportion of minority workers employed in basic industry, the catastrophic unraveling of the nation's industrial base is shattering the American dream.

Communities are in shock from the sudden down-sizing of auto and related employment. In cities throughout our industrial heartland littered with abandoned factories, the fiscal crisis caused by the auto depression is continuing to have disastrous consequences. In Detroit, for example, public library closings have been scheduled, a sad irony given the recent universal recognition that better educational opportunity is essential not only to our quality of life, but also to a successfully restructured U.S. economy.

Set against this stark backdrop, auto's recent fledgling recovery is welcome news. Sales and employment are up modestly; as a result of massive cost-cutting, profits are up enormously. Yet it would be a serious mistake if this economic breather is taken as a reason for continued inaction by Congress and the Administration. Major structural problems still cloud the industry's long-term future, problems which only government action can solve.

A critical choice is upon us as a nation. We are not on the verge of returning to a 3 million worker-plus auto sector. Between now and 1990, it is probable that market growth will be fully offset by productivity growth. In the 1948-78 period, auto employment grew despite rapid 3.5% annual productivity growth, as sales of cars and trucks (including imports) rose from 5.4 million to 15.4 million units — an annual growth rate of 3.6% — while vehicles got more complex at a rate of nearly 2% a year, and annual working hours declined steadily. All of that is now changed. The U.S. market has been mature since the late 1960s; people are keeping their cars longer and driving fewer miles per year. The 1978 sales record may well hold up for years to come. Cars will still become more complex yet may require less labor, as a result of microelectronics and the application of other new technologies. Advances in flexible, programmable automation are also likely to raise annual productivity growth considerably above the historical trend rate. All of this will mean continuing downward pressure on employment levels. To minimize the social cost of this otherwise potentially desirable transition, it is imperative that the rate of employment decline be kept within predictable and manageable bounds. For that reason, public policy must press hard on the levers available to it, by regulating the import share, parts and captive vehicle foreign sourcing, and working hours. Moreover, the nation owes a far greater debt than it has been prepared to acknowledge heretofore to those workers who have been or who will be displaced; they are the front-line victims of economic change.

Structural changes in the world auto industry mean that policy-makers must go far beyond broad-stroke macroeconomic policies to address the problems of the sector and its workers. Companies are becoming increasingly footloose. There are more and more international joint ventures. Captive imports will soon be on the rise. There has been a rapid increase in the use of imported components in domestic cars and trucks: in 1982 alone, the Big Three brought 767,000 engines and 1,023,000 transmissions into the U.S. and Canada. Active involvement by foreign governments in the auto sector around the world, in both developed and industrializing nations, has contributed to significant global overcapacity. With continued U.S. failure to adopt an industrial policy for our auto sector, the biggest chunk of world capacity likely to be scrapped is here.

U.S. macro policy — especially monetary policy — has made the problems of the auto sector even worse. Not only did that policy throw the economy into a tailspin and drive up customers' and dealers' interest expense, but it also produced an overvalued dollar which made imports cheaper and exports harder to sell. International differences in tax structure, principally between the U.S. and Japan, have also hampered the ability of the domestic industry to compete. These are things that the industry and its workers are powerless to affect; we need the government's help. That help should be in many forms, including assistance to workers and communities, rather than costly and ineffective tax breaks or other aid to the companies. In short, there has to be an industrial policy in this country, complete with necessary complements in the tax policy, labor market, trade and other areas.

A key element of that policy for auto should be prompt enactment of S. 707, the domestic auto content legislation. With 73% domestic content in the cars and light trucks sold here last year, the U.S. had 560,000 core auto jobs (in the car and light truck categories)[1] and 1.32 million associated supplier jobs, for a total of 1.88 million. Each point of domestic content, then, amounts to 25,800 OEM and supplier jobs. That's the direct employment payoff from policies that increase or preserve domestic content, as well as a measure of the cost of failing to adopt such policies.

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[1] The other 125,000 workers in SIC 371 were employed producing replacement parts and heavy trucks and buses.

While forecasts always involve a big element of guesswork, UAW economists predict that, if Congress fails to enact S. 707, domestic content of the vehicles sold here in 1990 could easily decline to just 54%, as imports take 40% of the market and the Big Three's use of imported components in domestically-assembled vehicles rises from 5% today to 20%. However, with a policy such as S. 707 that stabilizes the import share, places curbs on Big Three foreign sourcing, and requires substantial U.S. direct investment by high-volume importers, the figure could instead be 79%. The difference of 25 points between 79% and 54% domestic content by 1990 means 650,000 auto sector jobs and — based on the macro multiplier used in Congressional Budget Office's 1982 analysis of the content bill — a grand total of 1.25 million U.S. jobs. If it is in the public interest to retain that additional auto-generated employment and investment — in a world in which virtually all other auto producing nations and aspiring producing nations have long since taken far tougher steps — then the domestic auto content bill is an indispensable element of a sound U.S. industrial policy for the auto sector.

Contrary to a widespread misimpression, the content approach — unlike simple quotas — contains a number of the elements that would be expected to emerge from meaningful tripartite industrial policy negotiations, were those ever to occur. First, in return for imposition of investment requirements on their foreign competitors, the U.S.-based producers would be forced to accept constraints on their foreign sourcing. Second, consumer choice and competition would be retained, as no favoritism would be shown the domestic companies vis-a-vis foreign firms producing here. American consumers would continue to be assured the substantial benefits of competition among U.S. and foreign-based producers in regard to product quality, manufacturing methods, and price, while the public would be protected against the risk of massive social cost. A content law would also encourage retention and further development of state-of-the art domestic small car production, a vital segment of the market which the U.S.-based multinationals — if left unregulated — may decide to write off.

Even with the content law, auto employment is likely to do little better than stagnate near current (mid-1983) levels. The alternative, however, is massive further loss of auto jobs. We estimate that total SIC 371 employment in 1990 will be about 510,000 without the content law and about 745,000 — the same as 1983 and 260,000 below 1978 — with such a policy.[2]

Regardless of the strength and duration of the current economic recovery — and there is serious cause for concern on both counts — it is important to recognize that recovery in no way undercuts the need for decisive action now to influence what will happen to the industry and its workers in the second half of the 1980s and beyond. Without such a long-term view by U.S. policymakers, auto sector employment — and, derivatively, the health of much of the industrial base — will be purely a function of private corporate investment decisions and the industrial policies of other nations, with potentially disastrous domestic economic consequences.

The content bill is no special brief for the UAW: new foreign-based producers in the U.S. may win market share from the Big Three, and many of the jobs created or preserved as a result of the legislation may be in hard-to-organize supplier shops. The objective, rather, is to retain and revitalize a key sector of the economy, based on a sober assessment of the immense social cost — in terms of employment, income generation, technology diffusion, productivity, and regional dislocation — of failure to do so. The industry has changed massively and will continue to do so; we do not want to put the economy in cement in pursuit of jobs at any cost. We do, however, want the public to recognize that it can change the path that will be followed. We are proposing that the nation select a path that gets us to a dynamic, vital, competitive industrial base while minimizing costs incurred along the way, whether borne by companies, workers, or units of government.

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[2] The Subcommittee may be aware of other recent forecasts that are more optimistic with respect to future auto industry employment, such as the recent forecast of the Bureau of Labor Statistics. We wish we thought the latest BLS 1995 forecast of nearly 900,000 SIC 371 jobs was accurate; unfortunately, it is based on several questionable assumptions, including projected productivity growth well below the 1957-82 average of 3.5 percent, a constant import share, annual sales and output growth higher than 4.5 percent, and no increase in the use of foreign parts in vehicles sold here by U.S.-based automakers. Each of these assumptions appears open to question. The combined effect of flexible automation and efficiency gains from work flow reorganization will likely boost future productivity gains far above the 3.5 percent historic trend level; in the absence of public policies to limit import share growth and foreign sourcing, both are likely to increase substantially, and a 4.5 percent market growth assumption appears far too optimistic.

Auto Is A Key "Linkage" Industry

It is instructive to analyze why virtually every other nation with a significant auto industry has seen fit to retain, revitalize, and if possible, expand employment in that industry — and why so many of the large industrializing countries have been following the same approach. They have a good reason: auto has unusually rich and diverse linkages to other industries.

In the U.S. economy, auto has significant linkages to at least four major industrial groups; metalworking, electronics, chemicals (broadly defined), and services. Each billion dollars (in 1972 dollars, so about 2 billion current dollars, or about 200,000 cars and light trucks) in auto sales generates 50,600 jobs. Of these, some 15,000 are in auto (SIC 371) itself, but the other 35,600 are widely dispersed among the four above-mentioned industrial groups.

The largest linkage is with basic metalworking, including iron, steel, aluminum, and copper (5,300 jobs per 200,000 vehicles); stampings (2,000 jobs) and machinery (3,200 jobs). Auto consumes 20-30% of all U.S. steel production, depending on the year; 50% of the malleable iron; 34% of the zinc; and 12% of the primary aluminum. The auto-steel-machinery complex is a basic industrial and geographic agglomeration that is central to the U.S. (or any advanced) manufacturing economy. Not surprisingly, this is also the main cluster of high value-added industries targeted by countries such as Japan, South Korea, and Brazil for reasons which vary by country, including the importance of a metalworking base to exports, to income generation, to extractive industries, and to the development of new technologies.

The second set of linkages is the auto industry's growing purchases from — and R & D feedback to — the applied electronics industry. Driven partly by fuel economy and emission abatement needs, much of the technological improvement in automotive products since the mid-1970s has taken the form of increased on-board electronics. Add to that the soaring share of auto's $10-billion annual capital spending that goes to electronic equipment, and it becomes clear what a shrunken auto sector would mean to U.S. producers of high technology products. Auto today consumes one-third of U.S. robotics output, and a like share of both CAD and CAM equipment.

Based on 1972 input-output relationships, sales of 200,000 vehicles generate about 1,000 computer, communications, circuit board, and scientific instruments jobs. More up-to-date input-output data would undoubtedly show a figure several times higher. The linkage is two-way, moreover. Bulk purchases of electronic componentry such as microprocessors by the auto sector help high-tech firms move up in volume and hence further along learning curves, driving down their costs. Unlike the economic geography of the metalworking linkage, the electronics connection ties auto to industries with strong East and West Coast and Sunbelt concentrations.

The third important linkage is between the auto sector and the chemical-fibers-plastics-synthetic rubber industrial complex. Each 200,000 vehicles sold generate about 3,200 such jobs, mainly in paint, rubber, and plastics. Auto uses 60% of the synthetic rubber consumed in the U.S. The industry is a major R & D contributor to — and proving ground for — the high value-added chemicals sector, with involvement in everything from new high-strength polymers to new, harder paints, to ceramic engines. The auto-chemicals link also goes beyond the frostbelt to include the Houston and Tulsa areas and the West Coast.

The fourth linkage is to services. Contrary to the view of some who believe that a transition to a "service economy" is underway, in reality much of what shows up as "service" employment are marketing, insurance, maintenance and repair functions which are totally dependent on manufacturing. Moreover, many services — whether restaurant food or hospital treatment — are consumed locally, and would not exist in the absence of the incomes generated by the local manufacturing economic "base." Hence, unrestricted deindustrialization will often have a negative effect on service employment as well.

According to the BLS, each $2 billion in auto demand generates 12,900 service jobs of which on the order of 5,000-6,000 depend on domestic manufacture. Moreover, these figures do not include the dependency of locally consumed service employment on auto in those parts of the country in which auto and supplier production is located.

As a result of these important linkages, it is clear that the economic impact of the auto industry's continued shrinkage, should that be allowed to happen, would extend far beyond the auto companies' "bottom line". When an auto company decides to replace domestic with foreign-sourced transmissions or small cars, the U.S. economy bears costs as a result of the loss of auto industry (and, derivatively, steel, machine tool, etc.) jobs; the auto company that made the decision doesn't bear all of those costs. Moreover, if those supplier industries lose economies of scale or other production efficiencies as a result of losing their auto customers, the economy as a whole suffers.

Conclusion

Auto is not a "sunset industry"; its 25-year record of 3.5% annual productivity growth establishes that. So does its unprecedented capital spending in the cash flow-poor 1979-82 period. Many other steps have also been taken: union and management recognition of a shared interest in improved quality, better attendance, and enriched jobs is paying dividends. After three years of recession-driven decline, productivity rose sharply in 1981 and 1982 despite falling production. Claims that U.S. auto industry productivity lags far behind Japan's are greatly exaggerated. The Japan Productivity Center, an independent Tokyo-based think-tank with researchers representing labor, business, and academia, estimates that Japan's auto industry only pulled ahead of the U.S. (by 1%) in 1980, a year in which our industry's production plummeted while Japan's soared.

Quality of U.S.-made vehicles is up sharply, especially in domestic small cars and in redesigned light trucks. Both Honda and Volkswagen of America have reported higher quality in their U.S.-built vehicles than in their Japan- and German-built products, respectively. Longer and broader warranties are becoming the norm. Absenteeism is down.

UAW members' concessions played a big role in the automakers' return to profitability and, in the case of Chrysler, saved the corporation from extinction. The auto companies, for their part, took tough steps in the design, quality control, product development, and other areas. Part of their recent success on the bottom line has come from the shedding of capacity, a strategy that imposed huge costs on auto workers and communities even as it restored profitability by lowering breakeven points.

But despite the best possible effort, there's little that the industry can do on its own to overcome the effects of tight money, an overvalued dollar, an undervalued yen, or differences in national tax structure and tax treatment — not to mention the impact of foreign industrial policies. These and other problems facing the industry and its workers can only be addressed by decisive U.S. government action. The current upturn, though welcome, should not lull anyone into thinking that the need for such action is past.

Enactment of domestic content legislation would be an important step in the right direction, and an important start toward development of an overall policy for all U.S. industries.

The UAW appreciates this opportunity to express its views on the future of U.S. basic industry and of its workers, and on the role of public policy in shaping that future.

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U.S. Council for an Open World Economy
INCORPORATED
7216 Stafford Road, Alexandria, Virginia 22307
(202) 785-3772

Statement submitted by David J. Steinberg, President, U.S. Council for an Open World Economy, to the Subcommittee on Economic Growth, Employment, and Revenue Sharing of the U.S. Senate Committee on Finance in hearings on the future of U.S. basic industries
October 3, 1983

(The U.S. Council for an Open World Economy is a private, non-profit, public-interest organization engaged in research and public education on the merits and problems of developing an open international economic system in the overall national interest. The Council does not act on behalf of any private interest.)

I applaud the Subcommittee's interest in studying the problems of this country's basic industries, and the chairman's emphasis on the need for "workable strategies to improve productivity and industrial competitiveness," in contrast to simplistic measures addressing only symptoms. Both Congress and the Executive Branch too often have addressed only the symptoms of industrial hardship (e.g., rising import competition, to which import restriction became the chosen remedy), neglecting coherent strategies that addressed the totality of these industrial problems within the framework of the total national interest. The trade legislation itself is seriously inadequate in this regard.

This statement is limited to three proposals: (1) the need for a definitive, explicitly free-trade strategy, not only to program totally free-and-fair trade by the industrialized countries (ultimately all countries), but to spur the most constructive strategies in industrial redevelopment, (2) the need for government to organize itself in such a way as to enhance effective national attention to these issues, and (3) the need to convert the import-relief provisions of the trade law into an instrument for coherent industrial policies addressing the real problems and needs of industries seeking and deserving government help. Urgently needed measures this statement does not cover include sound fiscal and monetary policies to achieve and sustain a healthy rate of non-inflationary economic growth.

A Free-Trade Strategy

A properly devised "industrial policy", in the sense of an overall policy to stimulate soundly based industrial growth in the total national interest, should have a suitable international-trade-policy premise. The trade policy that would best advance the highest ideals of U.S. industrial growth, including that of U.S. basic industries, is a definitive, deliberate, explicitly free-trade strategy aimed, not at unilateral free trade (which is well beyond the pale of realism), but a fully free-and-fair-trade charter negotiated by the world's most economically advanced countries under the rules of the General Agreement on Tariffs and Trade (or initially by as many of these countries as may care to join the United States in such an initiative). Factoring such a trade-policy premise into redevelopment of the nation's basic industries would energize the most constructive range of government, business and labor decisions for rebuilding these industries in the new environment of the 1980's and 1990's. A free-trade strategy is also an essential ingredient for the best-designed program of export expansion, itself an essential component of a sound policy of industrial development. Such a premise is lacking today. Aside from what our Council has advocated, no such strategy in foreign and domestic policy is being proposed anywhere in government or in the private sector.

Just as a free-trade initiative is essential to optimum attention to saving and strengthening the nation's basic industries and stimulating overall the soundest form of national economic growth, so concerted, coherent, constructive and comprehensive attention to the problems and needs of the basic industries and other sectors of U.S. production is vital to securing and sustaining a national commitment to free trade as an explicit, deliberate national goal. The nation is unprepared for what needs to be done in both the foreign-economic and the domestic-economic dimensions of this question.

Inter-Agency Council on Economic Development

To dramatize the nation's need for incisive attention to economic redevelopment, international competitiveness and the special needs of our basic industries, and to maximize the government's preparedness for dealing coherently and constructively with these issues, an inter-agency council on national economic development should be established equal in stature to the National Security Council. The President should be its chairman, and a special assistant to the President for national economic development should be its full-time executive vice-chairman, with Cabinet rank but not already head of a government agency, nor permitted to hold both jobs in the future. He or she should be subject to Senate confirmation.

The main responsibility of the Department of Commerce in this framework should be administration of whatever role the government assumes in helping U.S. industries adjust to the new realities they confront. The Departments of Agriculture, Interior, Labor, Transportation, Education, etc. should have corresponding responsibilities in their respective areas of jurisdiction.

The Council should maintain close, productive liaison (a) with the private sector through properly designed advisory committees associated with the government agencies holding major responsibilities in the respective fields, and (b) with state and local governments, including specifically the governors of the 50 states. The Council should be required to submit an annual report to Congress on the progress and problems of national economic development, including the state of our basic industries per se, and Congress should be required to hold hearings on this report.

Such systematic, coherent attention to these issues should provide the President, the Congress and the nation with a clear picture of (to paraphrase Lincoln) where we are in this field and whither we are tending, so that we may judge intelligently what to do and how to do it.

"Import Relief" as an Industrial-Policy Instrument

Since troublesome import competition is a "flash point" of industrial malaise (usually leading the particular industries to seek government help against foreign competition), the "import relief" provisions of the trade legislation constitute a practical instrument for coherent, constructive attention to the problems of basic and other industries.

The time has come to stop the "pig-in-a-poke" approach to import relief that has all along -- and too long -- characterized the granting of import restriction to ailing industries able to prove serious injury (or threat thereof) from imports. Trade restriction of any kind, if justifiable at all, should be only one component (indeed the measure of last resort) in a balanced, coherent, systematically monitored "industrial policy" addressing the real problems and needs of the affected industry. Government has a role to play in such a policy, but strictly accountable commitments by management and labor should be important parts of the industry-adjustment strategy.

Government action should include re-assessment of all statutes, regulations and policies materially affecting the adjustment capabilities of these industries, to determine if there are any inequities that impair such capability. Any inequities should be corrected with deliberate speed. The redevelopment strategy for a particular industry should be the subject of annual Congressional review for as long as there are any measures of government assistance -- to determine the need and cost of continued government aid, and whether the aid provided is suitable and adequate for the stated objective.

Even if import injury is not found, the import-relief proceedings could expose situations that warrant government assistance (excluding trade restriction) to properly designed industry-adjustment efforts in which, as I have proposed with respect to import injury, the industry's management and labor would make commitments vital to the success of the undertaking. I can recall no instance where the government has used import-relief proceedings -- whether or not import injury was found -- as a basis for a balanced program of government assistance to the particular industry outside the realm of import control or of "adjustment assistance" (as the term is commonly used) to individual firms or groups of workers.